

ENVIRONMENTAL ASSESSMENT and FINDING OF NO SIGNIFICANT IMPACT

Ag47 Projects

Environmental Assessment Number OR080-04-08
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Bureau of Land Management, Oregon State Office
Salem District, Cascades Resource Area
Marion and Linn Counties, Oregon

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Abstract: This environmental assessment discloses the predicted environmental effects of three projects on federal land located as follows: Projects 1 and 2 - Township 8 South, Range 1 East, Section 35; Township 8 South, Range 2 East, Section 31; Township 9 South, Range 2 East, Sections 3 and 5, Willamette Meridian, within the North Santiam and Little North Santiam Watersheds. Project 3: Township 10 South, Range 2 East, Sections 11 and 15 within the Thomas Creek Watershed. **Project 1, the Ag47 timber sale**, is a proposal to commercially thin approximately 432 acres. **Project 2, Riparian Treatment without wood removal** in the sections containing units of the Ag47 timber sale, is a proposal to create snags, CWD, wolf trees and small openings in Riparian Reserves with several small scale projects to enhance wildlife habitat. **Project 3, Thomas Creek LSR Enhancement**, is a proposal to improve habitat conditions by density management thinning (with wood removal) on approximately 67 acres of 40-50 year old plantations in Late Successional Reserve. Project 3 would also include other small scale treatment projects, without wood removal, adjacent to the stands proposed for thinning.

FINDING OF NO SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (**BLM**) has conducted an environmental analysis (Environmental Assessment Number OR080-04-08) for three projects located on BLM lands within: Township 8 South, Range 1 East, Section 35; Township 8 South, Range 2 East, Section 31; Township 9 South, Range 2 East, Sections 3 and 5; and Township 10 South, Range 2 East, Sections 11 and 15, Willamette Meridian.

- **Project 1: The Ag47 Timber Sale**, commercial thinning in 65-70 year old conifer plantations on approximately 341 acres of Matrix and 91 acres of adjacent Riparian Reserve (EA section 2.2.2).
- **Project 2: Riparian Treatments without wood removal in the vicinity of the Ag47 timber sale** would be accomplished by multiple small scale treatments over the next several years designed to create snags, CWD, wolf trees and small openings to enhance wildlife habitat. These activities would be accomplished opportunistically as resources become available. (EA section 3.2.2).
- **Project 3: Thomas Creek LSR (Late Successional Reserve) Enhancement**, density management and habitat improvement treatments designed to accelerate the development of more complex stand structures characteristic of late-successional forests in approximately 67 acres of 40-50 year old plantations that are now designated as LSR. Most of this project would be accomplished by commercial thinning. Additional areas adjacent to the thinning units would be treated without removing wood from the sites, similar to Project 2, within five years of completion of the thinning (EA section 4.2.2).

The Ag47 Projects Environmental Assessment (**EA**) documents the environmental analysis of the proposed projects. The EA is attached to and incorporated by reference in this Finding of No Significant Impact determination (**FONSI**). The following documents direct and provide the legal framework for management of BLM lands within the Salem District: 1/ *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP); 2/ *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl*, April 1994 (NWFP); 3/ *Little North Santiam Watershed Analysis*, 1997 (LNSWA); 4/ *Thomas Creek Watershed Analysis*, 1996 (TCWA); 5/ *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl*, March 2004 (SSSP). All action alternatives of both proposed projects are designed to comply with the management goals, objectives, and direction (e.g. standards and guidelines) of the above documents (EA section 1.2).

The EA and FONSI will be made available for public review August 11, 2004 to September 10, 2004. The notice for public comment will be published in a legal notice by the Stayton Mail newspaper, and posted on the Internet at <http://www.or.blm.gov/salem/html/planning/index.htm> under Environmental Assessments. Comments received by the Cascades Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before September 10, 2004 will be considered in making the final decisions for this project.

Finding of No Significant Impact

Based upon review of the EA and supporting documents, I have determined that the Proposed Actions for the three projects described above are not major federal actions, and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, an environmental impact statement is not needed. This finding is based on the following discussion:

Context: Potential effects resulting from the implementation of the proposed actions have been analyzed within the context of the Watersheds, and the project area boundaries listed below. The proposed actions would occur on approximately 341 acres within the General Forest Management Area (GFMA) portion of the Matrix land use allocation (LUA) (RMP p. 8, 20), 91 acres within the Riparian Reserve LUA, and 67 acres within the Late Successional Reserve LUA (RMP pp 8, 9, 15, 20). This acreage encompasses less than four percent of any affected 6th field watershed and less than one percent of any of the 5th field watersheds [40 CFR 1508.27(a)].

Project Number	Project Units	Project Acres		5 th Field Watershed	6 th Field Watershed		
		Matrix	Riparian Reserve/ LSR		Name	Acres	Percent Affected by Projects
1 & 2	8-1-35	75	0	Willamette River	Upper Mill Creek	10,543	0.7
1 & 2	8-2-31, 9-2-3 (part, 30%), 9-2-5	191	61	Lower North Santiam River	Stout Creek	7,393	3.4
1 & 2	9-2-3 (part, 70%)	75	30	Little North Santiam River	Polly Creek	2,944	3.6
3	10-2-15	0	10	Thomas Creek	Indian Prairie Creek	1,857	0.5
3	10-2-11	0	57	Thomas Creek	Avery Creek	3,504	1.6

Intensity:

1. Projects 1, 2 and 3 are unlikely to have any significant adverse impacts on the affected elements of the environment [40 CFR 1508.27(b) (1)]. The affected elements for Projects 1 and 3 are: vegetation and forest stand characteristics, soil and site productivity, water and hydrology, wildlife, fisheries and aquatic habitat, visual resources (project 1 only), recreation (project 1 only), and fire management/air quality (EA sections 2.3, 4.3). The affected elements for Project 2 are: vegetation and forest stand characteristics, and wildlife habitat. (EA section 3.3).

- Projects 1 and 3: The following is a summary of the design features that would reduce the risk of adverse effects to the above resources (EA sections 2.2.2.2, 4.2.2.2).
 - Use of Best Management Practices (BMPs) (RMP Appendix C) to minimize soil disturbance and compaction and to prevent measurable erosion;
 - Seasonal condition operating restrictions to protect leave trees, soil and water quality;
 - Protection of CWD, snags and old-growth remnant trees;
 - Protection of riparian zones;
 - Areas with special habitat characteristics would be excluded from the operating area.
- Project 2: The following is a summary of the design features that would reduce the risk of adverse effects to the above resources (EA section 3.2.2.2).
 - No ground disturbing operations are included in the project.
 - Individual treatments would be designed to avoid altering shade on the streams.
 - All treatments would be designed specifically to restore desirable stand structure characteristics.

As a result of implementing the design features described in EA sections 2.2.2.2, 3.2.2.2, and 4.2.2.2, any potential effects to the affected resources are anticipated to be site-specific and/or not measurable (i.e. undetectable over the watershed, downstream, and/or outside of the project area) [40 CFR 1508.27(b) (1)], (EA sections 2.4, 3.4, 4.4).

2. Projects 1, 2 and 3 would not affect:
 - Public health or safety [40 CFR 1508.27(b)(2)];
 - Unique characteristics of the geographic area [40 CFR 1508.27(b)(3)] - There are no historic or cultural resources, parklands, prime farmlands, wild and scenic rivers, wilderness, or ecologically critical areas located within the project area area (EA sections 2.3, 3.3, 4.3);
 - Districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor would the proposed action cause loss or destruction of significant scientific, cultural, or historical resources [40 CFR 1508.27(b)(8)] (EA sections 2.3, 3.3, 4.3);
3. Projects 1, 2 and 3 are not unique or unusual. The BLM has experience implementing similar actions in similar areas without highly controversial [40 CFR 1508.27(b)(4)], highly uncertain, or unique or unknown risks [40 CFR 1508.27(b)(5)].
4. Projects 1, 2 and 3 do not set a precedent for future actions that may have significant effects, nor does it represent a decision in principle about a future consideration [40 CFR 1508.27(b)(6)].
5. The interdisciplinary team evaluated Projects 1, 2 and 3 in context of past, present and reasonably foreseeable actions [40 CFR 1508.27(b)(7)] and have identified potential cumulative effects in the attached EA (EA sections 2.3, 3.3, 4.3);

6. These effects are not likely to be significant because of the project's scope (effects are likely to be too small to be measurable), scale (combined project area of 499 acres, less than 1 % of the total 5th-field watersheds), and duration (direct effects would occur over 2-20 years in Projects 1 and 3 - EA sections 2.4, and 4.4; beneficial effects from Projects 2 and 3 would continue through the life of the stands - EA sections 3.4 and 4.4).
7. Projects 1, 2 and 3 are not expected to adversely affect Endangered or Threatened Species or habitat under the Endangered Species Act (ESA) of 1973 [40 CFR 1508.27(b) (9)].

Wildlife: The AG47 proposal will be submitted for Formal Consultation with U.S. Fish and Wildlife Service in August 2004. The Biological Opinion associated with these projects is expected in October 2004. According to the effect determination guidelines in the draft BA, these projects "may affect, but are not likely to adversely affect" the spotted owl due to the modification of dispersal habitat. All applicable terms and conditions from the Biological Opinion would be incorporated into the project design features.

Fish: A determination has been made that the proposed project would have "No Effect" on ESA listed fish (see EA section 2.4.5 and EA Appendix 1, Endangered Species Act Determination of Effect for Lower Columbia River steelhead trout, Lower Columbia River chinook salmon and Upper Willamette River chinook salmon). As a result of the "No Effect" determination, no consultation with NOAA Fisheries for ESA listed fish species is required.

8. Projects 1, 2 and 3 do not violate any known Federal, State, or local law or requirement imposed for the protection of the environment [40 CFR 1508.27(b) (10)].

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Keith Walton, Team Lead

10 Aug 2004
Date

Reviewed by: Carolyn D Sands
Carolyn Sands, NEPA

August 10, 2004
Date

Approved by: Cindy Enstrom
Cindy Enstrom, Field Manager
Cascades Resource Area

August 10, 2004
Date

ENVIRONMENTAL ASSESSMENT

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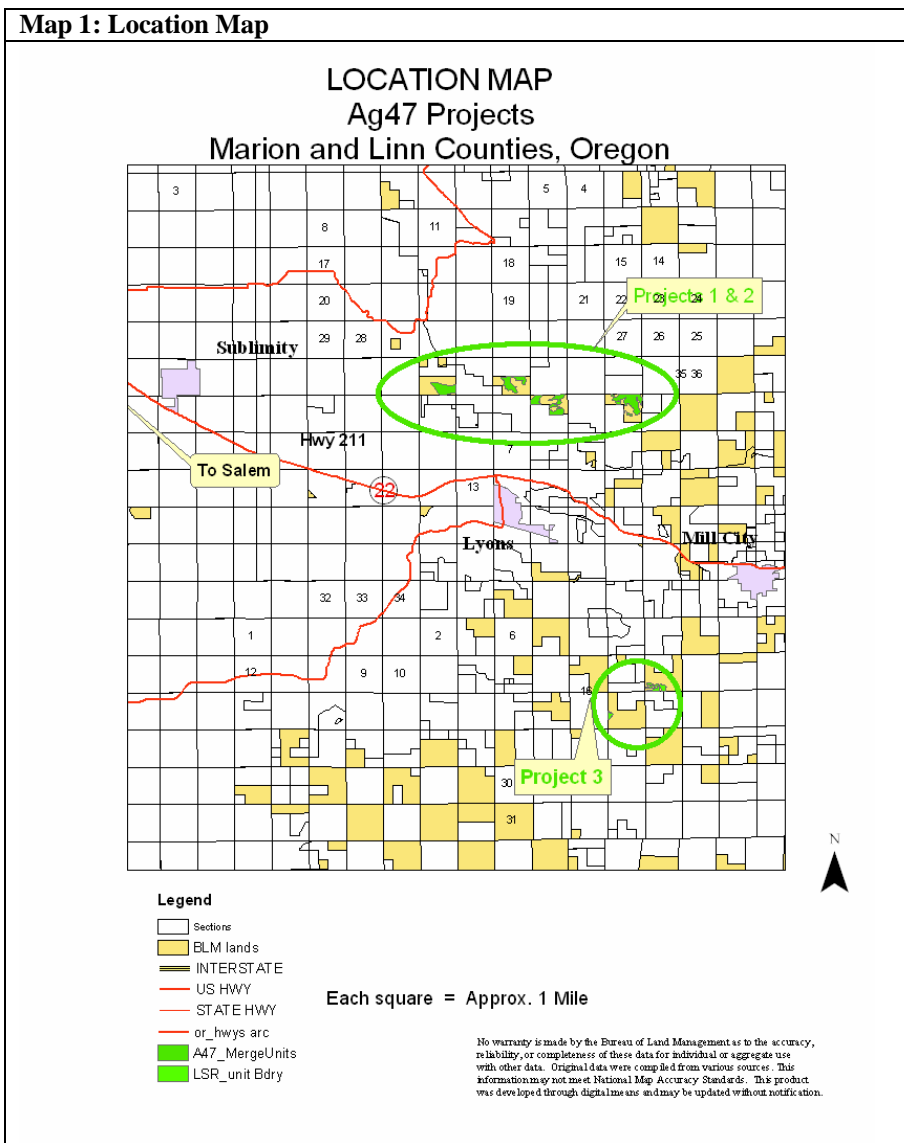
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1.0 INTRODUCTION

1.1 Project Area Location

The Ag47 Projects are located on BLM managed lands as follows:

- *Projects 1 and 2*: Township 8 South, Range 1 East, Section 35; Township 8 South, Range 2 East, Section 31; Township 9 South, Range 2 East, Sections 3 and 5, Willamette Meridian. The project area within Marion County, approximately three air miles north of Mehama, Oregon;
- *Project 3*: Township 10 South, Range 2 East, Sections 11 and 15 Willamette Meridian. The project area is in Linn County, approximately seven air miles southeast of Mehama, Oregon.



1.2 Conformance with Land Use Plan, Statutes, Regulations, and other Plans

The Ag47 projects are subject to the following documents, which direct and provide the legal framework for management of BLM lands within the Salem District:

1. *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP)
This plan has been reviewed and it has been determined that all action alternatives of both proposed projects conform with the land use plan terms and conditions (e.g. comply with management goals, objectives, direction, standards and guidelines) as required by 43 CFR 1610.5 (BLM Handbook H1790-1, Illustration 3). Implementing the RMP is the reason for doing this project. The proposed projects are located within the General Forest Management Area (GFMA) portion of the Matrix land use allocation (LUA) (Project 1), in the Riparian Reserve (RR) LUA (Projects 1, 2 and 3) and the Late Successional Reserve (LSR) LUA (Project 3), as identified on page 8 of the RMP. RMP references for this Environmental Assessment (EA) can be found in Table 17 (EA Section 7.1).

The projects are not within the following land use allocations - Adaptive Management Areas, Congressionally Reserved Areas, or Administratively Withdrawn Areas, so management direction specific to these allocations do not apply. In addition, pages 1-5 of the RMP describe the purpose and need of the RMP, the relationship of the RMP to BLM policies, programs, and other plans; and the vision and strategy of the RMP. All of this information was considered and incorporated into the design of this project.

2. *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old Growth Forest Related Species Within the Range of the Northern Spotted Owl*, April 1994 (the Northwest Forest Plan, or NWFP); Many of the standards and guidelines from the NWFP as well as the analysis from the associated Environmental Impact Statement (EIS) as incorporated into the RMP. The relationship between the NWFP and the RMP is described on page 1 of the RMP and RMP Appendix A-2 p. A-2-1.
3. *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl*, March 2004 (SSSP). This document amends that portion of the RMP addressing Survey and Manage species (p. 30-32). The project fully complies with the current Survey and Manage Mitigation Measure Standards and Guidelines and existing Special Status species policies.

This EA incorporates the analyses and tiers, where applicable, to the following documents: 1/ Salem District Proposed Resource Management Plan/Final Environmental Impact Statement, September 1994 (RMP/FEIS), 2/ Supplemental Environmental Impact Statement on Management of Habitat of Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (NWFP/SEIS), February 1994; and 3/ Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines, January 2004 (SSSP/SEIS). The discussion in this EA is site-specific and supplements analyses found in these documents.

In addition, the *Thomas Creek Watershed Analysis* (1996) and the *Little North Santiam Watershed Analysis* (1997) provided additional guidance in the design of these projects.

These documents are available for review in the Salem District Office. Additional information about the proposed Ag47 projects is available in the Ag47 Projects NEPA/EA Analysis File, also available at the Salem District Office.

1.3 Projects Covered in This EA

Three projects will be analyzed in this EA:

Project 1, the Ag47 Timber Sale, is a proposal to commercially thin approximately 432 acres.

Project 2, Riparian Reserve treatments without wood removal is a proposal to create snags, Coarse Woody Debris (CWD), wolf trees and small openings in Riparian Reserves in the sections identified for Project 1 to enhance wildlife and aquatic habitats.

Project 3, the Thomas Creek LSR Enhancement is a proposal to implement density management and habitat improvement treatments on approximately 67 acres of 40-50 year old plantations that are designated as LSR. Additional areas adjacent to these stands would be treated without removing wood from the sites, similar to Project 2.

1.3.1 Relationship between Projects

The three projects are not directly related to each other. They were evaluated by the same IDT and analyzed in the same EA for efficiency since they are in the same geographic area.

1.4 Decision to Be Made

The Cascades Resource Area Field Manager is the official responsible for deciding whether or not to prepare an environmental impact statement, and whether to approve projects 1, 2 and/or 3 as proposed, not at all, or to some other extent.

2.0 PROJECT 1– Ag47 Timber Sale (Tract No. 05-502)

2.1 Purpose of and Need for Action

Stands within the project area generally average 65 to 70 years old and resource data has identified that these stands are ready for thinning. For this project, treatment is proposed only for stands that can be harvested using conventional logging systems. The following describe the purpose of and the need for action:

- **Matrix Land Use Allocation (LUA) (RMP pp. 20-22):** To manage developing timber stands in the Matrix LUA so that:
 - A marketable timber sale can be offered that will contribute to a sustainable supply of timber for local, regional, and national economies and contribute to community stability (RMP pp. 20), as reflected in the Salem District allowable sale quantity (ASQ) (RMP, pp. 1, 46, 47).
 - A desirable balance can be achieved between wood volume production, quality of wood, and timber value at harvest (RMP p. D-3);
 - A healthy forest ecosystem can be maintained with habitat to support plant and animal populations and protect riparian areas and water resources (RMP p. 1, 20);
- **Riparian Reserve LUA (RMP pp. 9-15)** To manage some dense sites within the stands of the Riparian Reserve LUA so that:
 - Growth of trees can be accelerated to restore large conifers to Riparian Reserves (RMP p. 7);
 - Habitat (e.g. coarse woody debris, snag habitat, in-stream large wood) for populations of native riparian-dependent plants, invertebrates, and vertebrate species can be enhanced or restored (RMP p. 7);
 - Structural and spatial stand diversity can be improved on a site-specific and landscape level in the long term (RMP p. 11, 26, D-6).
- **Roads:** To maintain and develop a safe, efficient and environmentally sound road system (RMP p. 62) that:
 - Provides appropriate access for timber harvest and silvicultural practices used to meet the objectives above;
 - Reduces potential human sources of wildfire ignition and provides for fire vehicle and other management access.
 - Reduces environmental effects associated with identified existing roads within the project area.

2.2 Alternatives

2.2.1 Alternative Development

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall “...study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.”

No unresolved conflicts concerning alternative uses of available resources (section 102(2) (E) of NEPA) were identified. No alternatives were identified that would meet the purpose and need of the project and have meaningful differences in environmental effects from the proposed action. Therefore, this EA will analyze the effects of the “proposed action” and the “no action alternative”.

2.2.2 Proposed Action





The BLM proposes to commercially thin approximately 432 acres; 341 acres in the General Forest Management Area (GFMA) portion of the Matrix land use allocation (LUA) and approximately 91 acres in adjacent portions of those stands in the Riparian Reserve (RR) (See Table 1)

Table 1: Proposed Thinning for Project 1

Project 1, Ag47 Timber Sale							
Parcel Name	Section/ Unit Designation	Stand Avg. Age	GFMA Acres	RR Acres	Total Acres	Trees/Acre Before Treatment	Trees/Acre After Treatment
Mill Creek	8-1-35	65	75	0	75	101-164	50-90
Smith Creek	8-2-31	66	62	25	87	115	50-70
Pollystout	9-2-3 N	67	107	43	150	103	50-80
	9-2-3 S	69				114	50-80
Shellburg	9-2-5	70	97	23	120	105	50-70
Totals			341	91	432		

Approximately 70% of the sale would be harvested using ground based logging equipment and approximately 30% of the sale would be harvested using skyline yarding systems.

Photo 1 and Photo 3 are typical of the BLM forest stands proposed for thinning. Photo 2 and Photo 4 show nearby Oregon Department of Forestry (ODF) stands that have been thinned (Spring 2004) to very similar standards as are proposed for the BLM thinning.

<p>Photo 1: Before Treatment, previously thinned area. 8-2-31</p>	<p>Photo 2: After Treatment, ground based yarding. Adjacent to 9-2-5.</p>
	
<p>Photo 3: Before Treatment, area not previously thinned. 9-2-3</p>	<p>Photo 4: After Treatment, skyline yarding. Adjacent to 9-2-3.</p>
	

2.2.2.1 Connected Actions

1. Road Work

- **New Construction:** One temporary spur road, a total length of 0.4 mile or less, would be constructed to reach landing sites required for skyline yarding in unit 9-2-3. This road would be natural surface with no rock added. This road would be decommissioned and blocked after operations.
- **Reconstruction:** Approximately 0.4 mile of damaged natural surface road (Road 9-2E-5.4) would be reconstructed for access to 9-2-5B. This road and an unauthorized OHV trail that connects this road to a private road south of the unit, would be stabilized, made impassable, and blocked after operations (See Photo 5).

Photo 5: Road 9-2E-5.4



- **Renovation:**
 - Approximately 2 miles of existing natural surface road would be graded and shaped for access to 8-1-35. The private portion of the road (1.3 miles) would be left in useable condition and the BLM portion (.7 miles) would be stabilized and/or blocked after use.
 - Up to 10 miles of currently maintained rocked road would be renovated by brushing, spot-rocking, minor blading, and cleaning of ditches and culverts as needed.
- **Other:**
 - Road 8-2E-31.2: Approximately 0.2 mile of existing road would be used in its current condition, then stabilized and blocked.
 - Road 9-1E-12, segment G: Approximately 0.4 mile of existing natural surface road would be maintained for access to 8-2-31. This road would be stabilized and blocked after use to prevent unauthorized motor vehicle use. It is likely that much of this road would be incorporated into the ODF trail system. EA section 2.2.2.1, item 4.

2. Fuels Treatments (RMP p. 65)

- After harvest operations are complete, logging slash and debris would be piled, covered and burned at landings and within approximately 100 feet of roads that are open to motor vehicle travel by the public.

- Pile burning would be done under weather conditions that would be expected to keep smoke away from populated areas.
- 3. Blocking Potential OHV Trails (RMP p. 41)**
- Unauthorized OHV trails would be individually analyzed to determine the best combination of treatments to stabilize and prevent further use of the road while avoiding damage to other resources.
 - Skid trails and other potential access points that could result in new unauthorized OHV trails would be blocked and made impassible.
 - Existing unauthorized OHV trails would be made impassable.
- 4. Providing for Authorized Trails maintained by the State of Oregon (RMP p. 41)**
- Authorized trails would remain available for use whenever there is no conflict with harvest operations. Appropriate signs would be posted when trails are closed.
 - The current and re-established routes, development, use and maintenance of these trails would be governed by an agreement between the BLM and the State of Oregon.
- 5. Special Forest Products (SFP) (RMP p. 49)**
- Special Forest Products from the harvest units would be offered for harvest if market demand, product availability, and contract timing allow such offerings.

2.2.2.2 Project Design Features

The following is a summary of the design features that reduce the risk of effects to the affected elements of the environment described in EA section 2.3. The proposed activities would implement the standards and guidelines described in the RMP from the pages specified in Table 17. Design features are organized by actions.

1. Timber Harvest – General

- Logging activities and connected actions would implement Best Management Practices (BMP) (RMP Appendix C, pp. C-1 to C-9) required by the Federal Clean Water Act (as amended by the Water Quality Act of 1987).
- ***Operational Periods***
 - The timber sale would be scheduled to allow operations for two or three operating seasons.
 - In general, timber harvest operations start in mid July and continue until fall/winter weather conditions end the operating season.
 - Operations are restricted for the following reasons (See Table 2):
 - The spring growing season, when bark is easily damaged (typically April 01-June 30): No falling or yarding operations would be allowed when it could do more damage to residual trees beyond the levels needed for snags and CWD recruitment. (Silvicultural Prescriptions).

Operating procedures and mechanical protections that prevent damage to retained (leave) trees may extend the operating season.

- High soil moisture: Road work and most ground based logging/skidding would not be allowed when soil moisture is high (RMP pp. 23, 24, C-2). The operation season for ground based logging/skidding may be extended in some areas if project design features can be implemented to minimize the risk of soil compaction and erosion under higher soil moisture conditions (e.g. yarding over a thick enough mat of logging slash to minimize soil compaction and erosion).
- Wet weather patterns: Hauling would not be allowed when weather and road conditions would deliver fine sediment from the haul route to stream systems.
- Spotted owl critical nesting season (March 1 to July 15). No habitat modification activities (felling, yarding, and road building) would be allowed, to minimize the risk of disturbance to spotted owls. The seasonal restriction could be waived if surveys indicate no presence of nesting spotted owls within disturbance range (0.25 to 0.5 miles) of the units.

Table 2: Typical seasonal restrictions calendar

Restricted Operations	Reason	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Falling and yarding	Bark slippage												
Road construction, Ground based logging and skidding	Soil damage												
Falling, Yarding, Road Const.	Owl nesting												
Hauling	Water quality												
Key	Operations generally allowed.												
	Operations typically dependent on conditions												
	Operations generally not allowed.												

2. Vegetation and Forest Stand Characteristics/Habitat Management

- **Marking and retention guidelines** would be implemented in each stand as follows:
 - Generally, smaller trees would be selected for cutting (thinning from below) and larger trees at the prescribed spacing would be retained for the residual stand.
 - A mix of species reflecting the pre-treatment composition of dominant and co-dominant trees in the stands (typically Douglas-fir with some western hemlock) would be retained, except that tree species which are more abundant in nearby unmanaged stands than they are in the managed stands (potentially western red-cedar or grand fir) may be favored for retention.
 - Some cull and deformed trees would be retained for future structural complexity.

- Residual densities would be variable over the landscape and, to some degree, within stands.
- Average canopy closure would not be reduced below 40% in a stand (Wildlife Report, p. 6).
- ***Remnant old growth trees*** would be retained and protected from damage.
- ***Snags:***
 - Unmerchantable snags of all sizes and decay classes would be left standing to the greatest extent possible under standard contractual logging procedures, BMP, and OSHA requirements. Any such snag cut or knocked down, would remain on site. Areas with high value snags and/or high concentrations of snags have been excluded from the proposed harvest areas.
 - Snags and deformed (cull) trees would be created by topping or base girdling green trees (up to two trees per acre in GFMA, and up to four trees per acre in Riparian Reserves).
- ***Coarse woody debris*** (CWD) already on the ground would be retained and protected from disturbance during treatment to the greatest extent possible under standard contractual logging procedures.
- ***Treatments within the Riparian Reserve LUA***
 - Treatment boundaries in Riparian Reserves and “no treatment” areas with special habitat characteristics throughout the project area would be delineated.
 - Riparian Reserves to be treated would be thinned to the same prescription as the adjacent GFMA portion of each unit in Project 1.
 - No Riparian Reserve treatments in 8-1-35 would be planned until Watershed Analysis is complete.
- ***Noxious Weeds*** (RMP p. 64): Ground disturbing equipment would be cleaned as needed to be free of off-site soil, plant parts and seed prior to entering the project area

3. Roads, Landings, and Hauling

- No new stream crossings would be constructed.
- Sediment traps, vegetation in ditches, filters, and/or suspending hauling on gravel roads during rainstorms would be used as necessary to prevent road-related sediment from entering streams.
- Roads to be stabilized would be shaped, waterbarred, partially covered with logging debris and/or blocked as needed to prevent erosion and unauthorized use. The subgrade would be retained for renovation and use as needed for future management.
- The temporary road to be decommissioned (in unit 9-2-3) would be shaped for proper drainage, ripped, seeded with native species and blocked in the same season that it is built. The subgrade would be retained for renovation and use as needed for future management.
- No hauling on wet roads would be permitted in 9-2-3 to provide additional protection for fish and water quality in the Little North Santiam Key Watershed.

4. Layout, Skidding and Yarding

- Ground based logging (skidder, harvester/forwarder, shovel, etc.) would follow existing skid trails for multiple pass trails (skid trails) wherever this practice would minimize resource damage.
- Equipment with lateral yarding capabilities would be used for Skyline yarding to reduce the number of yarding corridors and provide flexibility in locating those corridors.
- Designated genetically superior seed trees would be protected from damage.
- ***Operations in the Riparian Reserve LUA:***
 - A streamside buffer (topographic or ecological breaks, with a minimum distance of 50 feet from the edge of the channel) would be established on all streams to avoid direct impacts to biotic riparian zones.
 - Riparian Reserve areas to be thinned would be logged in conjunction with the adjacent GFMA portion of each unit.
 - No ground based equipment would be operated within the streamside buffer of any stream channel, except that designated crossings of dry ephemeral stream channels may be authorized if necessary. Protection measures designed to avoid soil disturbance, compaction and impacts to the channel would be implemented for each crossing.
 - Cables and other equipment may be attached to trees within the Riparian Reserves. Reserve trees in the Riparian Reserve that must be felled for safe operations would be left on site as CWD.
 - No skyline yarding corridors would be allowed to cross perennial streams.

2.2.2.3 Maps for Project 1 – See the next four pages.

United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Ag47 EA Project 1: AG47 Timbersale

Mill Creek Parcel


T. 8S., R. 1E., Section 35, W. M. - SALEM DISTRICT - OREGON

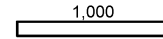


Legend

- Streams
- Existing Road
- Roads to be constructed
- Roads to be stabilized and closed
- Density Management - Riparian

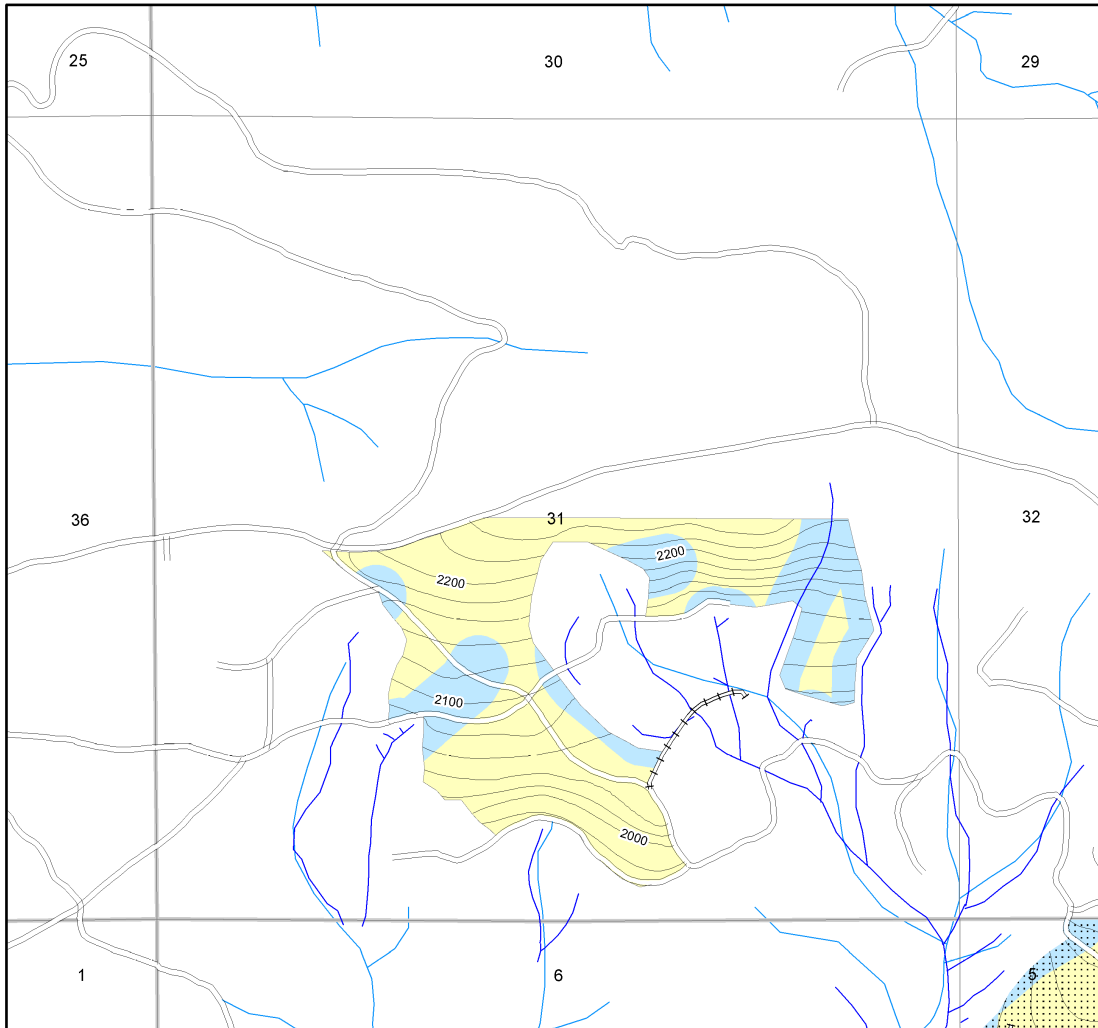
- Commercial Thinning - Matrix
- Ground based yarding area

 N Contour interval: 20'






 1,000 Feet



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data was compiled from various source data and may not meet U.S. National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.


United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Ag47 EA Project 1: AG47 Timbersale
Smith Creek Parcel
T. 8S., R. 2E., Section 31, W. M. - SALEM DISTRICT - OREGON

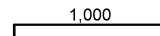


Legend

-  Streams
-  Existing Road
-  Roads to be constructed
-  Roads to be stabilized and closed
-  Density Management - Riparian

-  Commercial Thinning - Matrix
-  Ground based yarding area

 Contour interval: 20'

 1,000 Feet

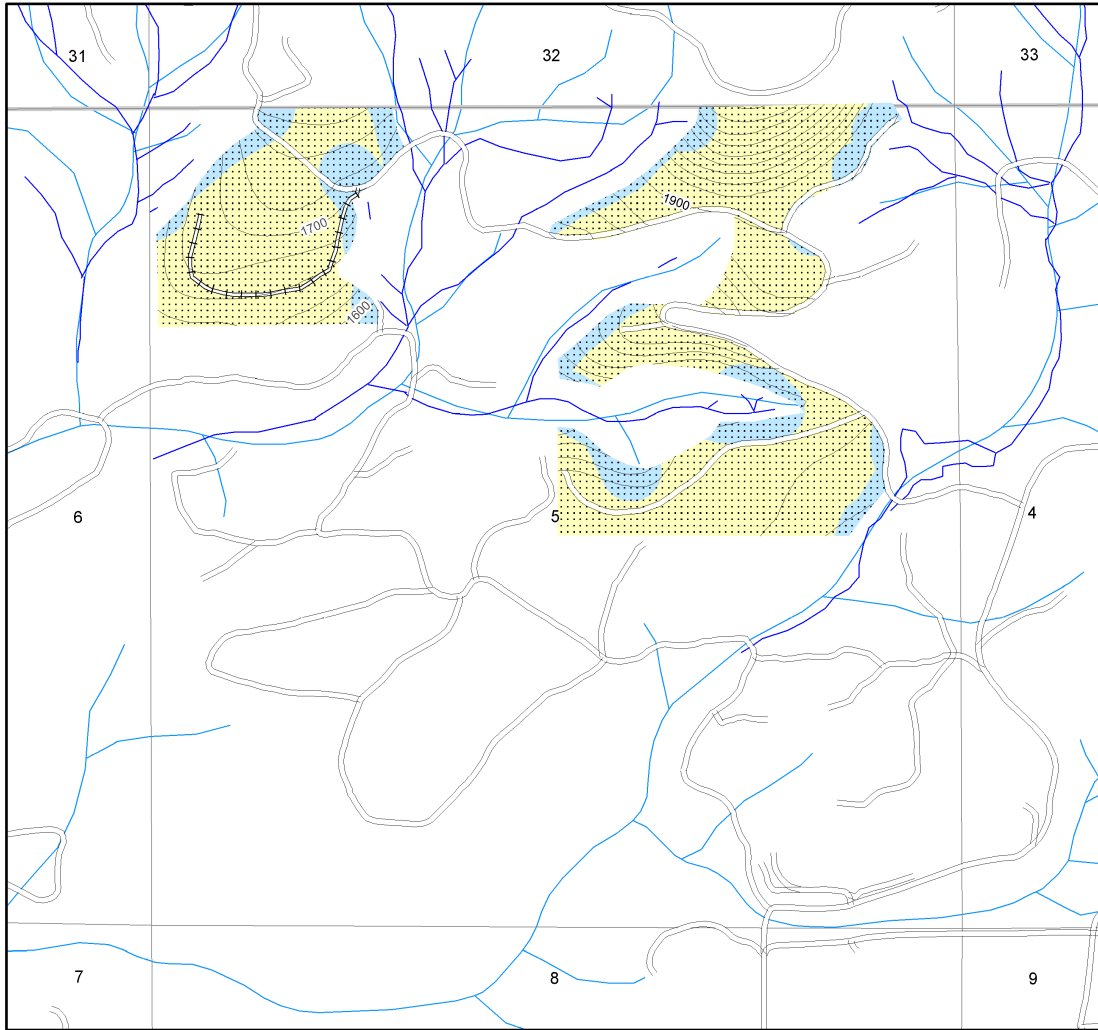
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data was compiled from various source data and may not meet U.S. National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

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Ag47 EA Project 1: AG47 Timbersale

Shellburg Parcel

T. 9S., R. 2E., Section 5, W. M. - SALEM DISTRICT - OREGON



Legend

- Streams
- Existing Road
- Roads to be constructed
- Roads to be stabilized and closed
- Density Management - Riparian

- Commercial Thinning - Matrix
- Ground based yarding area

Contour interval: 20'

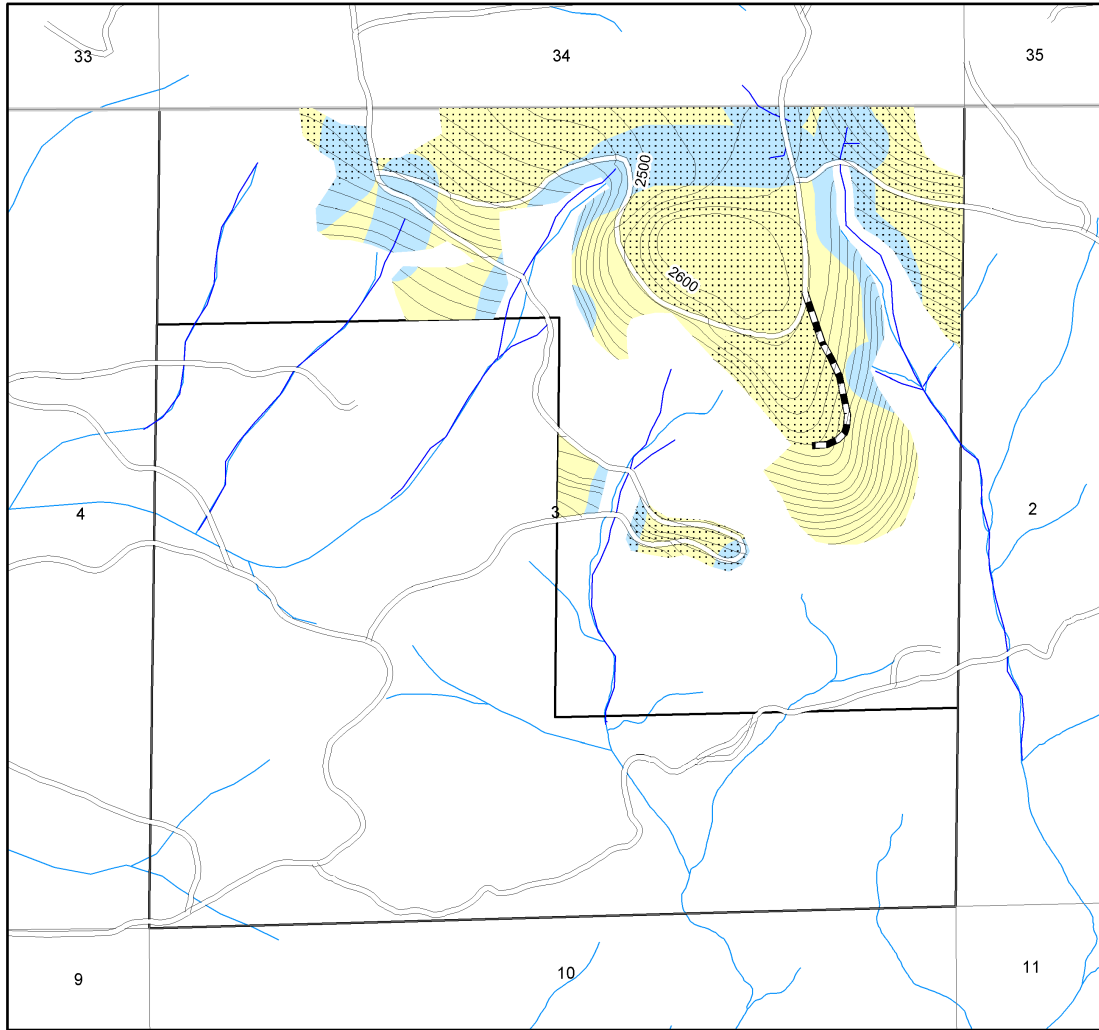
1,000 Feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data was compiled from various source data and may not meet U.S. National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Ag47 EA Project 1: AG47 Timbersale Polystout Parcel


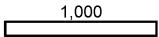
T. 9S., R. 2E., Section 3, W. M. - SALEM DISTRICT - OREGON



Legend

- Streams
- Existing Road
- - - Roads to be constructed
- + + + Roads to be stabilized and closed
- Density Management - Riparian

- Commercial Thinning - Matrix
- Ground based yarding area

 Contour interval: 20'
 1,000 Feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data was compiled from various source data and may not meet U.S. National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

2.2.3 No Action Alternative

The Ag47 Timber Sale would not be offered for sale and none of the design features of the sale would be implemented.

2.3 Identification of Affected Elements of the Environment

The interdisciplinary team reviewed the elements of the environment, required by law, regulation, Executive Order and policy, to determine if they would be affected by the proposed action. Table 3 (Critical Elements of the Environment from BLM H-1790-1, Appendix 5) and Table 4 (Other Elements of the Environment) summarize the results of that review. **Affected elements are bold.** All entries apply to the proposed action, unless otherwise noted.

Table 3: Critical Elements of the Environment for Project 1

<i>Critical Elements Of The Environment</i>		<i>Status: (i.e., Not Present, Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Yes/No</i>	<i>Remarks If not affected, why?</i>
Adverse Impacts on the National Energy Policy		Not Affected	No	There are no known energy resources located in the project area. The proposed action will have no effect on energy development, production, supply and/or distribution.
Air Quality (RMP p. 22)		Affected	No	Addressed in text, EA section 2.4.7
Areas of Critical Environmental Concern		Not Present	No	There are no ACECs within the subbasins of the project area.
Cultural Resources (RMP p. 36)		Not Present	No	No cultural resources are known or suspected to be present in the proposed project area.
Environmental Justice (Executive Order 12898)		Not Affected	No	The proposed action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Prime or Unique Farm Lands		Not Present	No	
Flood Plains		Not Present	No	The proposed action does not involve occupancy and modification of floodplains, and will not increase the risk of flood loss.
Hazardous or Solid Wastes		Not Present	No	
Invasive, Nonnative Species (plants) (Executive Order 13112)		Affected	No	Addressed in text, EA section 2.4.1
Native American Religious Concerns		Not Present	No	No Native American religious concerns were identified during the public scoping period.
Threatened or Endangered (T/E) Species or Habitat (RMP p. 32)	Fish	Not Affected	No	Addressed in text, EA sections 2.4.5, "No Effect" determination.
	Plant	Not Affected	No	
	Wildlife	Affected	No	Addressed in text, EA section 2.4.4.
Water Quality (Surface and Ground) (RMP pp. 22-24)		Affected	No	Addressed in text, EA section 2.4.3
Wetlands/Riparian Zones (RMP pp. 10, 22-24)		Affected	No	Addressed in text, EA sections 2.4.3
Wild and Scenic Rivers		Not Present	No	
Wilderness		Not Present	No	

Table 4: Other Elements of the Environment for Project 1

<i>Other Elements Of The Environment</i>		<i>Status: (i.e., Not Present, Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Yes/No</i>	<i>Remarks If not affected, why?</i>
Coastal zone		Not Present	No	
Fire Hazard/Risk (RMP pp. 65-67)		Affected	No	Addressed in text, EA section 2.4.7
Other Fish Species with Bureau Status and Essential Fish Habitat (RMP pp. 29)		Not Affected	No	Addressed in text, EA section 2.4.5
Land Uses (right-of-ways, permits, etc)		Not Affected	No	Agreements are in place and would not be changed by the proposed project.
Late Successional and Old Growth Habitat		Not Affected	No	Project not located in LSR, Special Management Areas, or late successional/old growth habitat. Project does not change late successional/old growth habitat.
Mineral Resources		Not Present	No	
Recreation (RMP pp. 41-45)		Affected	No	Addressed in text, EA section 2.4.6
Rural Interface Areas		Not Present	No	
Soils (RMP pp. 22-24)		Affected	No	Addressed in text, EA section 2.4.6
Special Areas outside ACECs (Within or Adjacent) (RMP pp. 33-35)		Not Present	No	
Other Special Status Species / Habitat	Plants	Not Present	No	
	Wildlife	Affected	No	Addressed in text, EA Section 2.4.4
Visual Resources (RMP pp. 36-37)		Affected	No	Addressed in text, EA Section 2.4.6
Water Resources – Other (303d listed streams, DEQ 319 assessment, Downstream Beneficial Uses; water quantity, Key watershed, Municipal and Domestic)		Not Affected	No	Addressed in text, EA Section 2.4.3
Wildlife Structural or Habitat Components - Other (Snags/CWD/ Special Habitats, road densities) (RMP pp. 24-26)		Affected	No	Addressed in text, EA sections 2.4.1& 2.4.4

Those elements of the human environment that were determined to be affected are: vegetation and forest stand characteristics, soil and site productivity, water and hydrology, wildlife, fisheries and aquatic habitat, visual resources, recreation, and air quality/fire management.

2.4 Affected Environment and Environmental Effects

This section describes the current condition and trend of those affected elements identified in section 2.3 and the environmental effects of the alternatives on those elements.

2.4.1 Vegetation and Forest Stand Characteristics

From: Ag47 Wildlife Report, Ag47 Silvicultural Report, Ag47 Biological Evaluation for Special Status Plant Species and Noxious Weeds (the Botany Report) with attached Ag47 Botany Species List

Affected Environment

All of the proposed units are second growth stands ranging from 60 to 70 years of age exhibiting varying mid-seral stage vegetation characteristics. Canopy closures average 70 to 80 percent, which typically cause tree crowns to continue to recede (lower limbs of the crown die as they are shaded). The overstory consists primarily of Douglas-fir with minor amounts of western hemlock. The understories consist primarily of western hemlock, vine maple, and huckleberry. Sword fern, bracken fern, salal, and Oregon grape dominate the ground cover. The dense canopy closure often shades the understory, limiting its growth. There is a minor component of hardwoods consisting of bigleaf maple with some golden chinquapin and red alder. *Phellinus weirii*, laminated root rot, is common throughout the vicinity, with some heavily infected areas within and adjacent to the proposed harvest units.

8-1-35, Mill Creek (75 acres): These stands are on top of a broad ridge that was clearcut in the 1930s, were naturally regenerated, and have not been previously thinned. As a result, the stands are crowded with relatively small crowns and there is suppression mortality throughout. Laminated root rot (*Phellinus*) is present, especially on the north side of the unit. There is a minor component of hardwoods in the proposed units consisting of bigleaf maple and red alder with a major component of hardwoods in the adjacent Riparian Reserves. No thinning is proposed in the Riparian Reserve LUA in this parcel.

8-2-31, Smith Creek (87 acres): These stands were clearcut about 1930, and naturally regenerated. The majority of the parcel was thinned in 1975, which simplified stand structure and spacing. There is *Phellinus* present, especially in the north central portion (5 to 6 acres) of the parcel, where the stand has developed some diversity in structure, spacing, and tree species. There is a minor hardwood component consisting of bigleaf maple, red alder and some chinquapin.

9-2-3, Pollystout (150 acres): These stands were clearcut about 1930, and naturally regenerated. The northern two-thirds of the parcel was thinned in 1972, which simplified stand structure and spacing. The southern portion has never been thinned, so it has higher tree density and smaller average tree size. There is suppression mortality evident, especially in the unthinned portions. There is a *Phellinus* area present near the center of the parcel on the southwest aspect slope just below the broad ridge top (6 to 8 acres), where the stand has developed some diversity in structure, spacing, and tree species. There are very few hardwoods outside of the Riparian Reserves and *Phellinus* areas.

9-2-5, Shellburg (120 acres): This parcel was clearcut about 1930, and naturally regenerated. This parcel was thinned in 1975, which simplified stand structure and spacing. *Phellinus* is present, with some heavily infected areas. There is a moderate hardwood component consisting of bigleaf maple, red alder and some chinquapin.

Special Status Botanic Species: There are no known sites of any Threatened, Endangered or Bureau Special Status botanical species within the project area or close vicinity, as determined by field surveys and known site data search. No habitat for these species was identified in the project area.

Invasive / Non-native Plant Species (including Noxious Weeds): Meadow knapweed (*Centaurea pratensis*), a State List Category II invasive/non-native plant species is known to be in the vicinity of the project area and is being monitored by the Oregon Department of Agriculture. It is not considered to be a threat for infestation. The following State List Category III invasive/non-native plant species are known to be in the project area and vicinity; tansy ragwort (*Senecio jacobaea*), bull and Canadian thistles (*Cirsium vulgare* and *C. arvense*), St. John's wort (*Hypericum perforatum*), and Scot's broom (*Cytisus scoparius*).

Environmental Effects

2.4.1.1 Proposed Action

- Thinning would immediately increase average tree diameter in the stand and concentrate future growth on fewer stems to develop larger diameter dominant and co-dominant trees with larger crowns compared to an unthinned stand.
- Thinning these stands at this time would halt crown recession and lead to the development of larger crowns with larger limbs as they grow into the spaces left by harvested trees.
- The increased growth in these stands would be expected to develop tree size and crown characteristics associated with mature and late successional forest more quickly than untreated forest stands in the area.
- The stands that have been previously thinned would be expected to develop these characteristics faster than those where the proposed action would an initial thinning.
- Stands that would be thinned for the first time would be expected to develop these characteristics faster than untreated (no action) stands in the area.
- Understory and ground cover species would increase in vigor with the increased light reaching the forest floor, increasing structural complexity in the understory of these stands.
- The forest canopy would be expected to close again in 10-20 years.
- The larger average tree diameters in treated stands would provide future management options that would not be available in untreated stands.
- Less dense wood (wider growth rings) and a higher proportion of lower grade wood (large knots in the live crown) would be expected to develop, compared to the no action alternative.
- *Phellinus* pockets would continue to spread, creating and enlarging canopy gaps over the next few decades.
- Invasive/Non-native Species (noxious weeds): The Category III noxious weed species are common in the vicinity, and populations would be expected to increase when soil is exposed and light is increased. Adverse effects from invasive/non-native species (such as decreasing the vigor of native understory species) are not anticipated.

2.4.1.2 No Action Alternative

- Without thinning, crowns would be expected to recede over the next 10-20 years, reducing the live crown ratio and slowing growth rates on the trees. Average tree size would continue to increase, but at a declining rate.
- As competition for light and nutrients increases, suppression mortality of smaller and weaker trees in the stand would be expected.
- Declining vigor in understory and ground cover species would be expected with increased shading from the closed canopy.
- Denser wood (narrower growth rings) and longer clear boles would develop, compared to the proposed action.
- *Phellinus* pockets would continue to spread, creating and enlarging canopy gaps over the next few decades.
- The potential changes to noxious weed populations associated with the proposed action would not take place.

2.4.2 Soil and Site Productivity

From: Ag47 Soils Report; Ag47 Silvicultural Prescriptions

Affected Environment

The soils in most of the project area are well suited for growing Douglas-fir. They are mostly cobbly loams and clay loams, and are generally deep and well drained. There are some areas on the steeper slopes where rock outcrops or surface cobbles reduce the moisture holding capacity of the soil, which reduces productivity. Very steep slopes in these soil types have been excluded from the project due to erosion potential. Minor areas, where disease or soil structure limit productivity, are potentially included within the project boundaries. Existing skid trails from past timber harvest are common through most of the proposed harvest areas. Some of these are suitable for re-use.

Environmental Effects

2.4.2.1 Proposed Action

Timber Harvest: Ground-based and cable harvesting (including landings) would moderately displace and compact soil less on less than 50 acres (< 10% of the project area), including some previously compacted skid roads from historic logging that would be used again. Compaction reduces the ability for soil to absorb water and increases surface runoff potential. It also limits water available to roots, reducing site productivity in the compacted areas until encroaching vegetation reestablishes soil structure. Growth rates in these compacted areas would be expected to approach that of undisturbed sites over the next two to three decades as soil structure is re-established. Harvest and equipment operating techniques would be designed to minimize soil compaction and displacement (RMP Appendix C).

Roads: Constructing up to 1,300 feet of new temporary natural surface road would displace topsoil and severely compact subsoil on less than 0.75 acres of forested land. This new road segment would be decommissioned (ripped, seeded, and blocked) following harvest to stabilize the soil surface. The short term increase in exposed soil from construction and decommissioning activities would yield slight (non-measurable) surface erosion. However any resulting runoff would infiltrate rapidly into adjacent undisturbed soils. Road work would be done during dry season to minimize soil impacts.

Stabilizing and closing two existing roads would curtail erosion caused by Off Highway Vehicle (OHV) use. Closing the road in 9-2-5 as described would also block access to an unauthorized OHV trail between this road and a private road to the south. Over time, some recovery to forested conditions would occur on this unauthorized OHV trail as logging slash and debris is incorporated into the soil and vegetation reestablishes soil structure.

The Oregon Department of Forestry authorized trail in T. 8S, R. 2E, section 31 would be allowed to be reopened in a way that minimizes erosion.

Pile Burning: Pile burning would remove organic material and expose soil under the piles to heat damage and rain compaction. The limited scope of these scattered and small areas of impact would be expected to result in undetectable levels of potential decreased site productivity for one to five years.

2.4.2.2 No Action Alternative

Compaction associated with past logging within the project area would continue to recover as roots reestablish soil structure. Erosion would continue on existing unmaintained dirt roads and unauthorized OHV trails.

2.4.3 Water and Hydrology

From: Ag47 Hydrology/Channels/Water Quality Report (Hydro Report); Ag47 Fisheries and Aquatic Habitat Report Detailed information and the analysis leading to these conclusions is found in the Hydro Report. The Fisheries Report provides additional background information.

Affected Environment

The project area contains several small headwater streams tributary to the North Santiam watershed and, in the case of upper Mill Creek, directly to the Willamette River. These streams are in proper functioning condition: well shaded, stable beds and banks, adequate quantities of wood, sediment and a diversity of riparian species.

Stream-side shading from riparian vegetation is adequate to buffer streams from temperature increases. None of the project area streams are listed on the State of Oregon's 303d list or in the 319 Report for water quality issues (see Hydrology report pg.12-13). However, local streams flow into the North Fork Santiam, which is listed for exceeding summer temperature standards.

Recognized beneficial uses of in-stream flows include anadromous fish, resident fish, recreation, and esthetic value. The North Santiam is a municipal watershed for the city of Salem. One portion of the project is in the Polly Creek drainage, a tributary to the Little North Santiam River which is a key watershed.

Environmental Effects

2.4.3.1 Proposed Action

Long-term, measurable effects to watershed hydrology, channel morphology, and water quality as a result of the proposed action are unlikely. This action is unlikely to alter the current condition of the aquatic systems either by affecting its physical integrity, water quality, sediment regime or in-stream flows.

Short-term, localized increases in stream sediment may occur as a result of harvest and road construction and use (see Hydrology report pgs.20-24). However, these are unlikely to be measurable.

Tree removal and road renovation and construction would not occur on steep, unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting are unlikely to result from this action. In addition, the potential for measurable sediment delivery to streams resulting from tree harvest and road construction/renovation would be reduced by implementing Best Management Practices (BMPs), such as stream side buffers, minimum road widths, minimal excavation, ensuring appropriate drainage from road sites, etc.

Because the proposed project will remove less than half the existing forest cover, it is unlikely to produce any measurable effect on stream flows. Within riparian zones, substantial portions of the riparian canopy would be retained, therefore maintaining riparian microclimate conditions and protecting streams from increases in temperature.

This proposal is unlikely to impede and/or prevent attainment of the stream flow and basin hydrology, channel function, or water quality objectives of the Aquatic Conservation Strategy (ACS). Over the long term, this proposal should aid in meeting ACS objectives by speeding the development of older forest characteristics in the riparian zone.

Cumulative Effects Analysis: The effects of past, on-going and foreseeable actions, in conjunction with the proposed action, are unlikely to contribute to watershed cumulative effects because they are unlikely to produce any measurable effects to sediment supply, turbidity levels, channel morphology, stream temperature regime, water quality or stream flows. This conclusion is based on the above discussion and the analyses documented in the Hydrology Report.

2.4.3.2 No Action Alternative

The “no action” alternative would result in the continuation of current conditions and trends at this site as described in the *Description of the Affected Resource* section of this report.

Effects to the watershed would continue to occur from the development of private and other agency lands (primarily timber harvesting and road building).

2.4.4 Wildlife

From: Ag47 Wildlife Report

Affected Environment

Vegetation: Vegetation is described in EA section 2.4.1.

Remnant Old Growth, Snags and Coarse Woody Debris (CWD): Overall, there are a few scattered old-growth (<1/acre) and larger mature second growth trees up to about 40 to 48 inches in diameter. There are no old growth remnants and virtually no large snags (>20 inches dbh) in the proposed unit in the Mill Creek parcel. There are approximately two large snags per acre in the Shellburg and Pollystout parcels, the majority of which are in the advanced stages of decay (classes 3, 4 and 5 without bark (soft)). There is an average of three large snags per acre in the Smith Creek parcel, most of which are soft. There are large numbers (10+/acre) of small snags (12 to 20 inches) in the early stages of decay (classes 1, 2 and 3 with bark attached (hard)) due to suppression mortality in many areas of all parcels.

There are moderate levels (120 to 240 lineal feet/acre) of large soft CWD (>20 inches in diameter) from the previous stand present in the Mill Creek, Pollystout and Smith parcels. There are low levels (<120 lineal feet/acre) of large soft CWD in the Shellburg parcel. There are high levels (>240 lineal feet/acre) of small CWD (<20 inches in diameter) in all decay classes, due to suppression mortality. Based on the stand exam information, there is a shortage of large snags and coarse woody debris (CWD) in the early decay classes in most areas of all parcels.

Phellinus is present in all of the parcels, and some fairly large gaps in the conifer canopy have developed some diversity in structure, spacing, and tree species associated with these infection pockets. Many of the large snags in the Smith and Pollystout parcels are found in these areas.

Special Habitats:

Special habitats include meadows, talus slopes, cliffs, and wetlands. There are no special habitats within the proposed Ag47 units. There is one wetland with a perennial pond adjacent to the proposed thinning in the southeast portion of the Shellburg parcel. The wetland has a well developed riparian zone associated with it, and flooded trees that have become snags and CWD. The main road is adjacent to the wetland, and a high water culvert allows drainage.

Special Status Species (Wildlife report, Attachment 1):

Federally Listed Species, Northern spotted owl: The proposed thinning unit in the Mill Creek parcel provides dispersal habitat, however the dispersal potential is impaired due to its location on the edge of the Willamette Valley.

The proposed thinning units in the Smith, Shellburg, and Pollystout parcels provide dispersal habitat with some roosting and foraging components, but generally lack nesting structure. None of the parcels are located in Critical Habitat for the Northern spotted owl. There are no unmapped LSR core areas in any of the parcels, and the closest unmapped LSR is located over 5 miles away.

There are two historic spotted owl sites located on adjacent State lands, but no pairs have been observed since 1994, and nesting has never been documented at either of these sites. A single male was heard in 2003 (classified as a non-territorial male by the State) on State land south of the Smith parcel. A single male was heard in the Shellburg parcel during 2004. Barred owls have been observed in the vicinity of the Smith, Shellburg and Pollystout parcels. The closest known active spotted owl site is located 2 miles to the north of the Smith parcel in Silver Falls State Park.

Other Special Status Species:

Amphibians: Surveys were conducted concurrently with mollusk surveys. Oregon slender salamanders, a Bureau Sensitive species that prefers CWD in advanced stages of decay were found during surveys and have been documented to occur in the vicinity of all four parcels.

Three aquatic special status amphibians are suspected to occur in the vicinity of the proposed action, but have not been found and documented. The Cascade torrent salamander prefers small clear cold springs, seeps, headwater streams and waterfall splash zones with gravel substrates. The tailed frog is an uncommon species found in clear cold, fast-flowing permanent springs and streams with cobble/boulder substrates in forested areas. The red-legged frog is common in marshes, ponds, and streams with little or no flow, from the valley floor to about 3,000 feet in the Cascades

Bats: Four species of bats listed as special status species could potentially be present in the project area. These species are associated with caves, mines, bridges, buildings, cliff habitat, or standing cull and snags with the bark attached. No caves, mines, bridges, buildings or suitable cliffs were found in the project area. Trees and snags with bark attached that could provide suitable habitat for bats are uncommon in these managed, mid seral stands.

Goshawk: The goshawk is a Bureau Sensitive species which prefers older forests with dense canopy closures at higher elevations than the proposed project areas. The habitat in the vicinity of the units is only marginally suitable for goshawks and there have been no observations of goshawks in any of the parcels.

Road Density: Road densities in the project area range from 4.2 to 5.6 miles per section (square mile), which is considered “high”. Roads in the Smith, Shellburg and Pollystout parcels are not gated or, gates are typically open, and disturbance due to human activity is high (vehicles, shooting, garbage dumping). Roads into the Mill Creek parcel are gated and human traffic is low.

Environmental Effects

2.4.4.1 Proposed Action

By creating snags and CWD; and favoring cull/deformed trees, minor species and hardwoods in selecting green trees to retain; the proposed action would have long term benefits to wildlife habitat by increasing structural and spatial diversity at the stand level. By applying a variety of treatments over GFMA and Riparian Reserves, such as leaving some stands unthinned, and using variable density, one entry and multiple entry thinning the proposed action would increase diversity at the landscape level in the long term.

The design features described in section 2.2.2.2 are expected to be effective in preventing the loss of large snags and green old-growth remnants.

In the short term (10 to 20 years), it is anticipated that there would be an incidental loss of small diameter snags and some disruption of CWD. This risk would be reduced with the implementation of design features protecting CWD and snags. Snags felled or knocked over by logging operations would add to existing CWD

Over the long term (>20 years), green tree retention, CWD recruitment, topping and base girdling to create snags and CWD would increase this type of material in the stand, thus increasing stand structure and diversity. As thinned stands mature, residual trees will increase in size and be available for recruitment or creation of snags, culls and CWD.

Untreated *Phellinus* areas will continue to contribute to stand diversity at both stand and landscape levels by providing a source of additional snags, CWD in the early stages of decay and areas of variable tree densities with canopy gaps.

Special Habitats:

Maintaining untreated buffers on the wetlands (adjacent to the Shellburg parcel) and maintaining more than 40 percent canopy closure of the surrounding stands is expected to adequately protect them from impacts (e.g.: habitat drying).

Special Status Species

The Ag47 project is not expected to result in a trend toward federal listing, loss of population viability, or elevation of status to any higher level of concern of any Species Status wildlife species due to the limited size and scope of the project, design features, untreated areas, and in some cases, the marginal quality of habitat for the species.

Federally Listed Species: Northern spotted owl

In the short term, approximately 432 acres of dispersal habitat with some roosting and foraging components would be altered as a result of thinning. These stands would be maintained as dispersal habitat after harvest. In the long term, canopy closures would increase and these stands could attain suitable habitat conditions with roosting, foraging and nesting components within 10 to 20 years.

Other Special Status Species

In the short term (10 to 20 years), protection of existing large snags and CWD would retain important habitat for primary excavators, amphibians and bat species. Direct adverse impacts to small snags and disruption of CWD due to logging could have minor short term adverse impacts on these species. Some micro-habitat drying is anticipated to occur as canopies are opened up, however, micro-habitat drying is anticipated to be minimal due to the high green tree retention and additional growth of understory and ground cover. Canopies are expected to develop and close within 10 to 20 years.

Over the long term (>20 years) as thinned stands mature, residual trees will increase in size and be available for recruitment or creation of snags, culls and CWD, improving and expanding habitat for primary excavators, amphibians and bat species.

No-entry buffers and untreated Riparian Reserves would adequately protect aquatic amphibians such as the red-legged frog, tailed frog and the Cascade torrent salamander.

Approximately 262 acres of marginal habitat for goshawks would be degraded through the reduction of canopy closures below current levels.

Road Densities

Open road densities would remain at current levels or decrease slightly. Two short spurs (roads 8-2E-31.02 and 9-2E-5.04) that are currently open would be blocked and stabilized. Access would remain the same after treatment with ungated year round access to the Smith and Shellburg parcels, and gated access to the Mill Creek and Pollystout parcels (neither of these gates is under BLM control).

Cumulative Effects

The proposed action is not expected to contribute to cumulative effects to wildlife with the retention of stream protection zones, a minimum of 40% canopy closure, protecting the wetlands, leaving areas unthinned within the project area, and the protection and recruitment of snags and CWD.

2.4.4.2 No Action Alternative

Natural processes and competition among overstory trees would continue. In previously thinned areas (Smith, Shellburg, portions of Pollystout and associated riparian areas), much of the material that would have developed into snags and CWD has been removed. Large diameter material over 20 inches would be recruited over decades, and snags and CWD would be generated over long periods of time. Existing material would remain intact, but continue to decay.

Unthinned areas (Mill Creek, portions of Pollystout and associated riparian areas) would be expected to slowly develop late successional conditions as crowding causes crown recession, suppression mortality and suppression of ground cover and understory species; followed by crown recovery, diameter growth, and development of understory structure.

There would be no change in spotted owl habitat and no effect to spotted owls. Habitat conditions would remain as described in the Affected Environment, and would continue to develop over time. Dense stands would be expected to take longer to develop suitable habitat conditions if left untreated.

There would be no effect on Special Status Species. Habitat conditions would remain as described in the Affected Environment, and would continue to develop over time.

There would be no changes road densities and current access.

2.4.5 Fisheries and Aquatic Habitat

From: Ag47 Fisheries and Aquatic Habitat Report

Affected Environment

Few fish-bearing streams exist in the project area. Many of the channels are ephemeral headwaters that are too small and steep to support fish. All streams in the project area are well shaded, and have stable beds and banks, adequate quantities of wood, sediment and diverse riparian plant communities.

Threatened and Endangered Species

Upper Willamette River steelhead trout and Upper Willamette River chinook salmon are listed as ‘threatened’ under the Endangered Species Act of 1973, as amended. Both species are found in the North Santiam River and the Little North Santiam River. Oregon chub are listed as ‘endangered’ under the Endangered Species Act of 1973, as amended, and are known to exist at some locations in the North Santiam River.

Approximate distances downstream from proposed thinning units to ESA listed fish habitat are as follows:

- Units 9-2-5 and 8-2-31: 1.5 miles to potential steelhead habitat in Stout Creek; 3.0 miles to potential chinook habitat in Stout Creek. 16 miles to the nearest known Oregon chub population in the North Santiam River.
- Unit 9-2-3: 1.75 miles to the Little North Santiam River (steelhead and chinook). 20 miles to the nearest known Oregon chub population in the North Santiam River.
- Unit 8-1-35: 6 miles to Salem Ditch (steelhead)

Environmental Effects

2.4.5.1 Proposed Action

The proposed thinning, including thinning within the Riparian Reserves, would not adversely affect aquatic habitat. The streamside buffers described in section 2.2.2.2. would protect perennial stream channels from direct impacts from timber harvest and protect ephemeral streams and wet areas from direct logging impacts.

Streamside buffers and tree selection as prescribed would ensure that shade levels would be maintained on stream channels.

No increases in water temperature or stream sedimentation are expected as a result of the projects due to the project design criteria. Similarly, timber hauling is not expected to result in any increase in sediment input to streams with the restrictions and other design features described.

The proposed temporary road construction to access the southern portion of Unit 9-2-3 would have no impacts on fish or aquatic because the proposed road is on a ridgetop with no hydrologic connections or proximity to streams. Additionally, all road construction and decommissioning would be conducted during the dry season, eliminating the potential for stream sedimentation.

Threatened and Endangered Species

Consultation with NOAA Fisheries and/or US Fish & Wildlife Service on the potential effects of a project is required for projects that 'may affect' ESA listed species. A determination has been made that this project would have 'no effect' on Upper Willamette River steelhead trout, Upper Willamette River chinook salmon or Oregon chub. Therefore, no consultation is necessary (See Appendix 1, *Determination of Effect for Upper Willamette River steelhead trout, Upper Willamette River chinook salmon and Oregon chub*).

2.4.5.2 No Action Alternative

Under the No Action Alternative, no changes to existing conditions would occur. See the description of the affected environment, above, for a description of trends and current conditions.

2.4.6 Visual Resources, Recreation and Rural/Urban Interface

*From: Ag47 Recreation and Rural Interface Resources Report
Ag47 Visual Resource Management Resources Report*

Affected Environment

Visual Resources: Glimpses of some of the units in Projects 1 and 2 may be seen from surrounding county roads and from State Highway 22. No critical or sensitive viewpoints or visual resources were identified for any of the projects. All proposed actions are within the VRM Class III and IV guidelines that apply to these units.

Recreation: The project areas are characterized by a forest setting and are accessed by gravel forest roads, except the Mill Creek parcel which is accessed by gated, private, natural surface roads. Evidence of man-made modifications such as roads and timber harvest are common on both private and public lands in general area.

Recreational use of the units in Projects 1 and 2 appears to be moderate. Several of the units are receiving hiking, mountain biking and equestrian use. Most of the use is associated with travel between Silver Falls State Park and the Shellburg Falls Recreation Area which is managed by the Oregon Department of Forestry (ODF). ODF has requested permission to establish designated trails reconnecting these two areas following the completion of thinning activities. Other recreational activities that may occur in the general area include camping, motorized vehicle use, hunting and target shooting. Under current BLM designations motorized vehicle use is limited to "Existing Roads and Designated Trails." No trails have been designated for off-road use by the BLM in the area surrounding and including the proposed units. As part of the Shellburg Falls Recreation Area, ODF prohibits off-road use by motorized vehicles on most of their lands in the area around the proposed units. Off-road use by motorized vehicles on private and public lands does still occur in areas without physical barriers.

Recreational use of the proposed units in Project 3 are most likely low given that motorized access to the units is limited by gates. Some of the recreational activities that are most likely to occur include hunting, mountain biking, hiking and equestrian use.

Rural/Urban Interface: None of the proposed units fall within a Rural Interface Area.

Environmental Effects for Projects 1 and 2 Ag-47 Matrix and Riparian Thinning

2.4.6.1 Proposed Action

Visual Resources and Recreation: A forest setting would still be maintained on all the units after harvest and changes to the landscape character are expected to be low. The visual character of understory vegetation disturbed by thinning activities would be expected to return within two to five years. Because a forested setting would be maintained, no visual cumulative effects were identified.

Impacts to allowed recreational activities would be low, except for a few months during active logging operations, when public use of the units would be restricted. This use could resume once thinning activities were completed. ODF would establish designated trails to reconnect Silver Falls State Park to Shellburg Falls Recreation Area after thinning operations are complete. In spite of the design features to prevent motor vehicle use, some motor vehicle use may continue to occur.

2.4.6.2 No Action Alternative

With the exception of unplanned events (e.g. wildfire, disease, etc.) no modifications to the landscape character of the proposed units would be expected to occur. Current patterns of recreational use (e.g.: dispersed camping, hiking, hunting, etc.; authorized and unauthorized hiking/biking/equestrian trails; unauthorized motor vehicle trails) would be expected to continue.

2.4.7 Fire Management / Air Quality

From: Ag47 Fuels Management/Fire Ecology Report

Affected Environment

Fuel loadings in the treatment areas prior to harvest are considered normal (within the natural range of variability) for young timbered stands in these age classes (estimated at 30 tons per acre, including 9 tons per acre of activity fuels (less than 3 inches diameter), the primary carrier of fire). These present fuel loadings have a low to moderate hazard of wildfire depending on the weather for any given fire season.

Lightning starts very few fires in the project area since ground strikes are relatively rare and usually accompanied by enough rainfall to eliminate fire starts. Human activity, another potential source of wildfire ignition, has not caused wildfires in this area for the last few decades, even with the recreational use in the area.

Environmental Effects

2.4.7.1 Proposed Action

Harvest operations would increase total fuel loading to 40-45 tons per acre and activity fuels would increase to 10-13 tons per acre. The greatest increase in potential fire hazard would be the first summer after harvest when "red slash" (dried needles still attached to cut branches) could carry fire. Activity fuels would decay and be reduced to pre-project levels in three to five years. Piling activity fuels adjacent to public access roads would reduce potential opportunities for ignition and would reduce potential rates of spread and fire intensity, increasing the time available for successful fire control by initial attack forces. Wet season burning of landing (and other) slash and debris piles would remove them as a potential attractive nuisance and reduce potential fire intensity if a wildfire were to occur. Under less than extreme conditions, wildfires starting in the project area after harvest operations could be controlled by readily available hand crews, engines, and machinery such as bulldozers.

Burning piles would eliminate the duff/litter layer and organic material near the soil surface, and alter soil structure in the upper layers of soil so that rain infiltration is reduced under individual pile sites. The productive capacity of these burned pile sites would be reduced, recovering over a period of several years as litter adds nutrients to the soil and as plant roots re-establish soil structure. The degree of these effects, and the diameter of the affected area, would be greater for machine piles than for hand piles. Some tree boles could be damaged by heat from burning these piles, but mortality is uncommon.

Smoke produced from burning should have little impacts on people because of the distance (approximately 2 miles) between the units and the nearest residences.

2.4.7.2 No Action Alternative

Current trends in human activity and related potential for fire starts would be expected to remain the same or increase. Some natural events (disease, stem exclusion, wind, or snow breakage) can produce higher than normal fuel loading, potentially similar to thinning operations.

2.4.8 Comparison of Alternatives With Regard to Purpose and Need

Table 5: Comparison of Alternative by Purpose and Need

Purpose and Need (EA section 2.1)	No Action	Proposed Action
Offer a marketable timber sale	Does not fulfill.	Fulfills.
Balance wood volume production, quality of wood, and timber value at harvest.	Meets wood volume production over course of rotation, logs at end of rotation would be smaller diameter which generally reduces quantity, quality and value compared to thinned stands.	Maintains volume production over the course of the rotation, lengthens the rotation some, logs at end of rotation would be larger diameter, which generally increases quantity, quality and value in white wood species compared to unthinned stands.
Maintain a healthy forest ecosystem with habitat to support plant and animal populations and protect riparian areas and water resources	Retains the element of a dense stand with high density, smaller tree diameters and increasing levels of small size CWD for the next decade or more in all stands in the project area.	Retains the element described under “no action” on untreated areas of the stands in the project area and encourages development of larger diameter trees and more open stand conditions in treated areas. This adds an element of diversity over the landscape not provided on BLM lands under the “no action” alternative.
Increase diameter growth rate in Riparian Reserves.	Does not fulfill.	Fulfills by concentrating stand growth on fewer stems.
Restore habitat for riparian-dependent species.	Fulfills by maintaining current trends that develop diversity slowly.	Fulfills by accelerating changes in some parts of some stands to develop more elements of diversity faster.
Provide for structural and spatial stand diversity on a landscape level in the long term.		
Provide access for timber harvest and silvicultural practices.	Partially fulfills. Main routes would be maintained under both alternatives. Would not preclude future maintenance for management activities. No maintenance would be done under this alternative at this time.	Fulfills. Would implement maintenance on roads, allowing continued access for management activities.
Control access to reduce potential fire ignition, provide fire control and other management access.	Fulfills. Access is currently open and would stay open.	Fulfills. Keeps access open for management activities.
Reduce environmental effects associated with identified existing roads within the project area.	Does not fulfill. No roads not currently meeting ACS objectives would be stabilized or closed at this time.	Fulfills. Identified roads would be closed or stabilized.

2.5 Compliance with Components Aquatic Conservation Strategy Objectives

Table 6 shows this project's compliance with the four components of the Aquatic Conservation Strategy (1/ Riparian Reserves, 2/ Key Watersheds, 3/ Watershed Analysis and 4/ Watershed Restoration).

Table 6: Compliance of Components of the Aquatic Conservation Strategy Objectives for Project 1

ACS Component	Project Consistency
Component 1 - Riparian Reserves	The Riparian Reserve boundaries would be established consistent with direction from the Salem District Resource Management Plan (p. 10). Maintaining canopy cover along all streams and the wetlands would protect stream bank stability and water temperature. Additionally, there would be no road construction within the Riparian Reserve.
Component 2 - Key Watershed	One portion of the Polystout parcel of Projects 1 and 2 is in the Little North Fork Santiam River watershed, which is a designated key watershed. The remainder of the project areas are located within the Willamette River, Lower North Santiam River and Thomas Creek watersheds, which are not designated key watersheds.
Component 3 - Watershed Analysis	The project area is within the areas analyzed in the following Watershed Analyses.: <i>Little North Santiam Watershed Analysis</i> , BLM 1997. <i>North Santiam Watershed Assessment</i> , E&S Environmental Chemistry, Inc., 2002 This project is consistent with the recommendations in the Watershed Analyses. The Mill Creek parcel is not covered by a completed watershed analysis. Riparian Reserve projects would be implemented following completion of Watershed Analysis.
Component 4 - Watershed Restoration	Increasing stand diversity in Riparian Reserves addresses this component.

Neither the proposed action nor the no action alternative would prevent the attainment of any of the nine Aquatic Conservation Strategy Objectives (Appendix 2, EA section 8.2).

3.0 PROJECT 2 - Riparian Reserve treatments without wood removal

3.1 Purpose of and Need for Action

Stands within the project area are similar to those described for Project 1, but were not selected for treatment with Project 1 for a variety of reasons. For this project, the IDT has identified stand types common in Riparian Reserves in the area that could benefit from site specific, small scale treatments to create specific elements of stand structure to enhance wildlife habitat. In addition, the following describe the purpose of and the need for action:

- To manage portions of mid-seral stage stands in the Riparian Reserve LUA to contribute to structural and spatial stand diversity and to enhance wildlife habitat in the long term.
- To allow flexibility to assess needs and to design and implement projects in these areas over the next several years, as resources to accomplish projects become available.

3.2 Alternatives

3.2.1 Alternative Development

No alternatives, other than No Action, were developed. See 2.2.1, Project 1, for an explanation of the rationale.

3.2.2 Proposed Action

Habitat restoration treatments without wood removal would be done within the Riparian Reserve throughout BLM ownership in the sections containing the proposed timber sale as described in Project 1 of the Proposed Action. Project elements include: creating wolf trees, snag habitat, CWD habitat, and small canopy gaps to enhance structural diversity in Riparian Reserve stands. Treatments would be designed to avoid soil disturbance or increasing water temperature from loss of tree shade. No wood would be removed from the site. Treatments would be done in multiple entries over the next several years as site conditions are appropriate and as time and funds are available. These treatments would be done separately from Project 1.

3.2.2.1 Connected Actions - No other actions are directly connected to this project.

3.2.2.2 Project Design Features

- Create small canopy gaps (less than 1/5 acre) or enhance existing small gaps by girdling or falling green trees.
- Develop and maintain selected “wolf trees” with the same type of treatment.
- Create snags by base girdling or topping trees.
- For each treatment, fire hazards would be abated as needed.
- All trees felled during treatments would be left on site as CWD.
- Treatments would be accomplished in multiple entries over a period of several years
- Allow for identification of project sites as resources are available to accomplish them,
- Adapt to changes in stand structure and new research results
- Keep treatments at a small scale to avoid adverse temporary impacts, and
- Minimize risk of bark beetle damage to residual Douglas-fir trees.
- Specific treatments would be accomplished as resources become available.

3.2.2.3 Maps for Project 2

See Project 1, section 2.2.2.3.

3.2.3 No Action Alternative

No treatments without wood removal would be planned or implemented in the Riparian Reserve in the sections containing Project 1.

3.3 Identification of Affected Elements of the Environment

The interdisciplinary team reviewed the elements of the environment, required by law, regulation, Executive Order and policy, to determine if they would be affected by the proposed action. Table 7 (Critical Elements of the Environment from BLM H-1790-1, Appendix 5) and Table 8 (Other Elements of the Environment) summarize the results of that review. **Affected elements are bold.** All entries apply to the proposed action, unless otherwise noted.

Table 7: Critical Elements of the Environment for Project 2

<i>Critical Elements Of The Environment</i>		<i>Status: (i.e., Not Present , Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Yes /No</i>	<i>Remarks If not affected, why?</i>
Adverse Impacts on the National Energy Policy		Not Affected	No	There are no known energy resources located in the project area. The proposed action will have no effect on energy development, production, supply and/or distribution.
Air Quality (RMP p. 22)		Not Affected	No	There are no actions which could potentially affect air quality.
Areas of Critical Environmental Concern		Not Present	No	There are no ACECs within the subbasins of the project area.
Cultural Resources (RMP p. 36)		Not Present	No	No cultural resources are known or suspected to be present in the proposed project area.
Environmental Justice (Executive Order 12898)		Not Affected	No	The proposed action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Prime or Unique Farm Lands		Not Present	No	
Flood Plains		Not Present	No	The proposed action does not involve occupancy and modification of floodplains, and will not increase the risk of flood loss.
Hazardous or Solid Wastes		Not Present	No	
Invasive, Nonnative Species (plants) (Executive Order 13112)		Not Affected	No	There are no soil disturbing activities or activities which could modify habitat for these species.
Native American Religious Concerns		Not Present	No	No Native American religious concerns were identified during the public scoping period.
Threatened or Endangered (T/E) Species or Habitat (RMP p. 32)	Fish	Not Affected	No	Fish habitat and populations not affected due to small scale and design features to prevent altering shade to streams.
	Plant	Not Affected	No	Would not modify habitat for these species.
	Wildlife	Affected	No	Beneficial effects. Addressed in text, EA section 3.4.1
Water Quality (Surface and Ground) (RMP pp. 22-24)		Not Affected	No	There are no soil disturbing activities and shading would not be significantly altered.
Wetlands/Riparian Zones (RMP pp. 10, 22-24)		Affected	No	Beneficial effects. Addressed in text, EA section 3.4.1
Wild and Scenic Rivers		Not Present	No	
Wilderness		Not Present	No	

Table 8: Other Elements of the Environment for Project 2

<i>Other Elements Of The Environment</i>	<i>Status: (i.e., Not Present, Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Yes/No</i>	<i>Remarks If not affected, why?</i>
Coastal zone	Not Present	No	
Fire Hazard/Risk (RMP pp. 65-67)	Not Affected	No	Would not modify fuel loadings or ignition potential.
Other Fish Species with Bureau Status and Essential Fish Habitat (RMP pp. 29)	Not Affected	No	No aquatic habitat modification.
Land Uses (right-of-ways, permits, etc)	Not Affected	No	Agreements are in place and would not be changed by the proposed project.
Late Successional and Old Growth Habitat	Not Present	No	
Mineral Resources	Not Present	No	
Recreation (RMP pp. 41-45)	Not Affected	No	Small scale and remote locations (away from roads and trails) of these projects would not affect this resource beyond the effects described for Project 1 (EA section 2.4.6)
Rural Interface Areas	Not Present	No	
Soils (RMP pp. 22-24)	Not Affected	No	No soil disturbing activities associated with this project.
Special Areas outside ACECs (Within or Adjacent) (RMP pp. 33-35)	Not Present	No	
Other Special Status Species / Habitat	Affected	No	Beneficial effects. Addressed in text, EA section 3.4.1
Visual Resources (RMP pp. 36-37)	Not Affected	No	Treatments would not be visible from roads.
Water Resources – Other (303d listed streams, DEQ 319 assessment, Downstream Beneficial Uses; water quantity, Key watershed, Municipal and Domestic)	Not Affected	No	The small scale of these activities would not have the potential to affect water quantity or quality.
Wildlife Structural or Habitat Components - Other (Snags/CWD/ Special Habitats, road densities) (RMP pp. 24-26)	Affected	No	Beneficial effects. Addressed in text, EA section 3.4.1

Those elements of the human environment that were determined to be affected are: vegetation and forest stand characteristics, especially as they pertain to wildlife habitat.

3.4 Affected Environment and Environmental Effects

This section describes the current condition and trend of those affected elements identified in section 3.3 and the environmental effects of the alternatives on those elements.

3.4.1 Vegetation, Forest Stand Characteristics and Wildlife Habitat

Affected Environment

See section 2.4.1., Vegetation and Forest Stand Characteristics for Project 1, and section 2.4.4., Wildlife for Project 1.

The emphasized aspect of the affected environment for project 2 is that there are many areas in the Riparian Reserve system associated with project 1 that have relatively uniform, even-aged conifer forest with a relatively simple stand structure due to stand history and past management practices. This simple stand structure is lacking one or more elements of late-successional structure (e.g. hard snags, CWD, deformed trees, wolf trees, canopy gaps, ground cover, understory, etc.) in many location locations throughout the Riparian Reserve system.

Environmental Effects

3.4.1.1 Proposed Action

Due to the low intensity and limited scope of the proposed activities in Project 2, no disruption of species or habitats would be anticipated. The treatments would begin providing specific habitat diversity elements described above in two to five years after each individual work project, and would be expected to continue contributing to desired stand structure for two decades or more, with some structural elements lasting far longer. Implementing specific work projects over the next several years would extend the overall effective period.

3.4.1.2 No Action Alternative

Most of the area would not be treated under either alternative. In the areas which would have been treated under the proposed action, some of these stand structure and habitat elements would develop more slowly over time in some locations. Examples of natural development of these characteristics include: canopy gaps due to disease, wind, snow and other natural events; snags due to suppression mortality (these snags would be smaller on the average because they would be recruited from the smaller size trees in the stand) and lightning strikes (larger trees, but rare occurrence, see *Ag47 Fire Ecology Report*); deformed trees due to disease, insects or breakage; CWD due to mortality or windthrow (as with snags, these would tend to average smaller size than the proposed action); and ground cover/understory development in canopy gaps.

Wolf trees would not be likely to develop, since crown recession would eliminate the potential for limbs low on the bole. Other elements may or may not develop in desired amounts and certainly would not develop as quickly as they would if the proposed action were implemented.

3.4.2 Comparison of Alternatives With Regard to Purpose and Need

Table 9: Comparison of Alternative by Purpose and Need

Purpose and Need (EA section 3.1)	No Action	Proposed Action
Develop elements of stand structural complexity for wildlife habitat.	Partially fulfills. Some elements would develop at some scale and at some time.	Fulfills. Specific work projects designed to achieve the objectives.
Allow flexibility to accomplish projects.	Does not fulfill. Without approval to implement the projects, many opportunities would be passed by because of the time and effort required to complete NEPA.	Fulfills. An in-place decision would allow projects to be implemented quickly as opportunities arise.

3.5 Compliance with Components Aquatic Conservation Strategy Objectives

Table 10 shows this project's compliance with the four components of the Aquatic Conservation Strategy (1/ Riparian Reserves, 2/ Key Watersheds, 3/ Watershed Analysis and 4/ Watershed Restoration).

Table 10: Compliance of Components of the Aquatic Conservation Strategy Objectives for Project 2.

ACS Component	Project Consistency
Component 1 - Riparian Reserves	Watershed analyses have been completed for most of the project area, and the need for structure identified. For the Mill Creek parcel, no operations within the Riparian Reserves would be planned until a watershed assessment has been completed.
Component 2 - Key Watershed	The Pollystout parcel is located partially within Little North Santiam River watershed, which is a key watershed. The remaining parcels are not within designated key watersheds.
Component 3 - Watershed Analysis	<p>The project area is within the areas analyzed in the following Watershed Analyses.:</p> <p><i>Little North Santiam Watershed Analysis</i>, BLM 1997. <i>North Santiam Watershed Assessment</i>, E&S Environmental Chemistry, Inc., 2002</p> <p>This project is consistent with the recommendations in the Watershed Analyses.</p> <p>The Mill Creek parcel is not covered by a completed watershed analysis. Riparian Reserve projects would be implemented following completion of Watershed Analysis.</p>
Component 4 - Watershed Restoration	Increasing stand diversity in Riparian Reserves addresses this component.

Neither the proposed action nor the no action alternative would prevent the attainment of any of the nine Aquatic Conservation Strategy Objectives (Appendix 2, EA section 8.2).

4.0 PROJECT 3 - Thomas Creek LSR Enhancement

4.1 Purpose of and Need for Action

Stands proposed for Project 3 average 40-50 years old and resource data has identified that these young plantations would develop desirable characteristics of late successional forests more quickly if treated than they would without further management. For this project, the Interdisciplinary team has narrowed down the project area to two stands that are in need of tree density management to develop desirable stand characteristics. In addition, the following describe the purpose of and the need for action:

- To increase structural complexity of selected forest stands with silvicultural practices designed to speed the development of older forest characteristics such as large diameter trees, snags, and other forest structures in late-successional forest designations (Public Law 106-393 Title II Project Application number (not assigned), 6/3/02, and Mid-Willamette LSR Assessment). Public Law 106-393 identifies the need for projects to benefit local communities and benefit federal lands and resources. The Mid-Willamette LSR Assessment identified the need to enhance wildlife habitat and help create diversity in young plantations within the LSR designation.
- To benefit local communities by providing jobs for local contractors. The Salem District Resource Advisory Committee and the IDT identified the need for a project design and contract(s) that could be successfully offered to local contractors and that would not have significant impacts as defined by NEPA.

4.2 Alternatives

4.2.1 Alternative Development

No other action alternatives were developed. See 2.2.1., Project 1, for an explanation of the rationale.

4.2.2 Proposed Action

Project 3, the Thomas Creek LSR Enhancement is a proposal to implement density management and habitat improvement treatments on approximately 67 acres of 40-50 year old plantations that are designated as LSR (see Map 4). Additional areas adjacent to these stands would be treated without removing wood from the sites, similar to Project 2.

Density Management

The density management portion of this project would take place on 41 acres of upland LSR and 26 acres of riparian LSR (see Table 11, below).

The method of accomplishing this work would be operationally identical to a commercial thinning timber sale, though some technical aspects of the contract may differ. Generally, the smaller and less healthy trees would be cut and removed, but a full range of thinning across diameter classes with variable-density marking guidelines designed to maximize horizontal structural diversity in the stand after treatment would be implemented to achieve the desired diameter and spatial distribution. Creating designated patch openings with small clearcuts is not proposed, however, the variable density thinning described above is expected to result in some small (less than ¼ acre) canopy gaps.

Removal of logs from the sites would generally be done with ground based logging equipment, though skyline yarding systems may be used in some locations.

Table 11: Proposed Harvest Units Summary

Project 3, Thomas Creek LSR Enhancement						
Section	Stand Avg. Age	Upland LSR Acres	Riparian LSR Acres	Total LSR Acres	Trees/Acre Before Treatment	Trees/Acre After Treatment
10-2-11	49	35	22	57	213	60-100
10-2-15	43	6	4	10	285	50-100
Total Acres		41	26	67		

4.2.2.1 Connected Actions

1. Roads

- **Road Renovation**
 - Approximately 0.8 mile of existing unmaintained roads
 - Up to 10 miles of maintained rocked road would be renovated by brushing, spot-rocking, minor blading, and cleaning of ditches and culverts as needed.
- **Stabilizing and blocking after operations**
 - 0.6 mile of the renovated road (10-2E-11 and 10-2E-15) would be stabilized and blocked after operations.
 - One culvert would be permanently removed from an ephemeral stream channel crossing.
- **Road 10-2-15**
 - 0.2 mile road 10-2-15 may be repaired and renovated beyond the unit and maintained in useable condition if Weyerhaeuser Co. re-opens this road under an existing road use agreement. If they do not re-open the road, it would be blocked after operations.

2. Fuels Treatments

- Landing and miscellaneous logging debris piles would be covered and burned.
- Skid trails and other potential access points that could result in unauthorized OHV trails would be blocked and otherwise made impassible.

4.2.2.2 Project Design Features

The design features described for Project 1 in section 2.2.2.2 generally apply to Project 3 as well. Exceptions are: design features pertaining to skyline logging (Project 3 units are all ground based logging), design features related to specific roads or other locations, and silviculture prescriptions/marketing guidelines. In addition, the following design features apply to Project 3

- Tree selection would be targeted for the specific needs of each part of each stand to develop the desired precursors to late successional characteristics while maintaining the health and stability of the retained stand. Thinning densities would be designed to encourage more rapid growth, promote tree health, and to adequately protect the stands from mass windthrow.
- Although no designated patch openings are proposed, canopy gaps up to 0.25 acre may be created by variable density thinning.

Riparian Treatments without Wood Removal:

Riparian Treatments are described in Project 2 (EA section 3.2.2). In addition:

- In the stands proposed for Project 3, especially 10-2-15, wide spacing around selected trees would be implemented to culture “wolf trees”, open grown trees that develop large crowns with large limbs growing low on the bole.

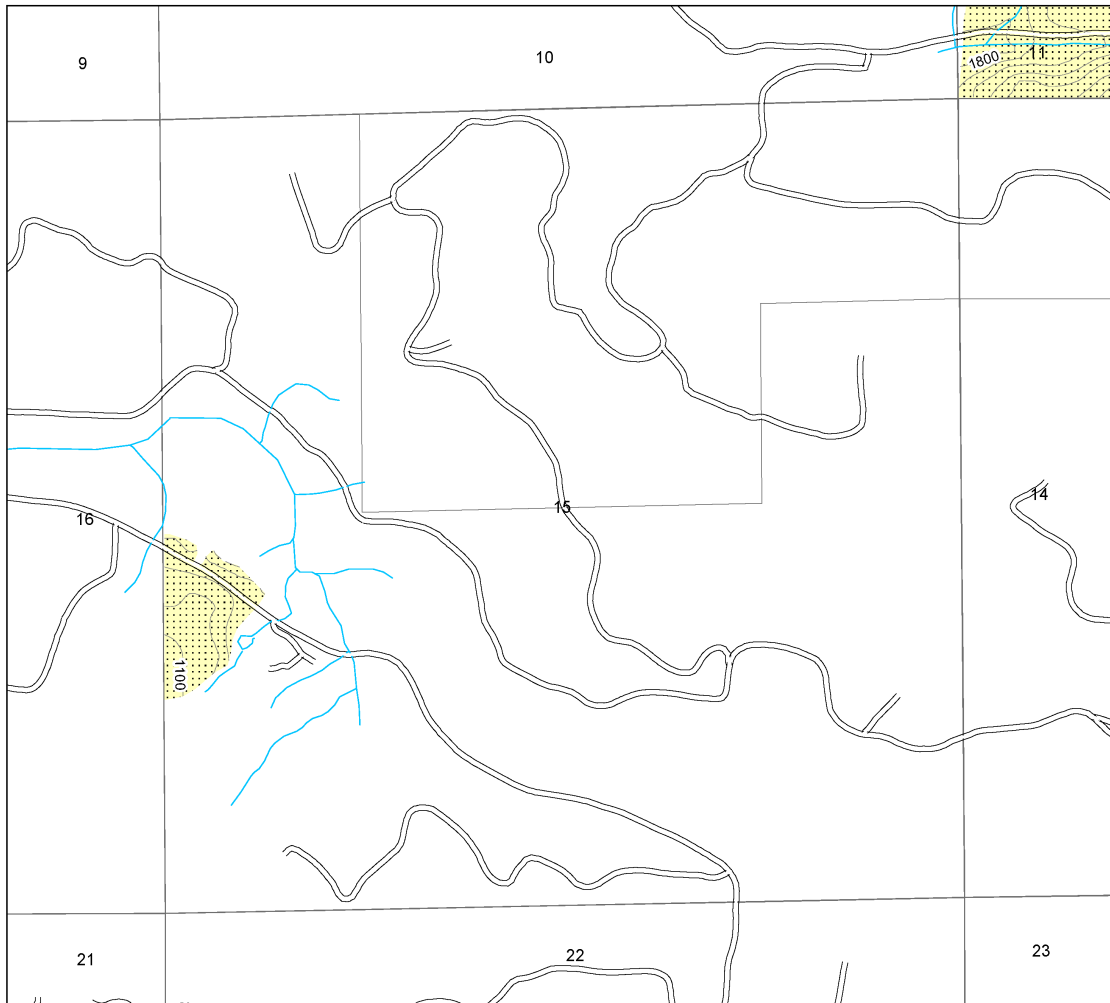
4.2.2.3 Maps for Project 3 – See the next two pages..

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Ag47 Projects EA

Project 3: Thomas Creek LSR Enhancement

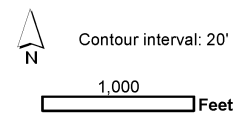
T. 10S., R. 2E., Section 15, W. M. - SALEM DISTRICT - OREGON



Legend

- Streams
- Existing Road
- Roads to be constructed
- Roads to be stabilized and closed

- Density Management
- Ground based yarding area



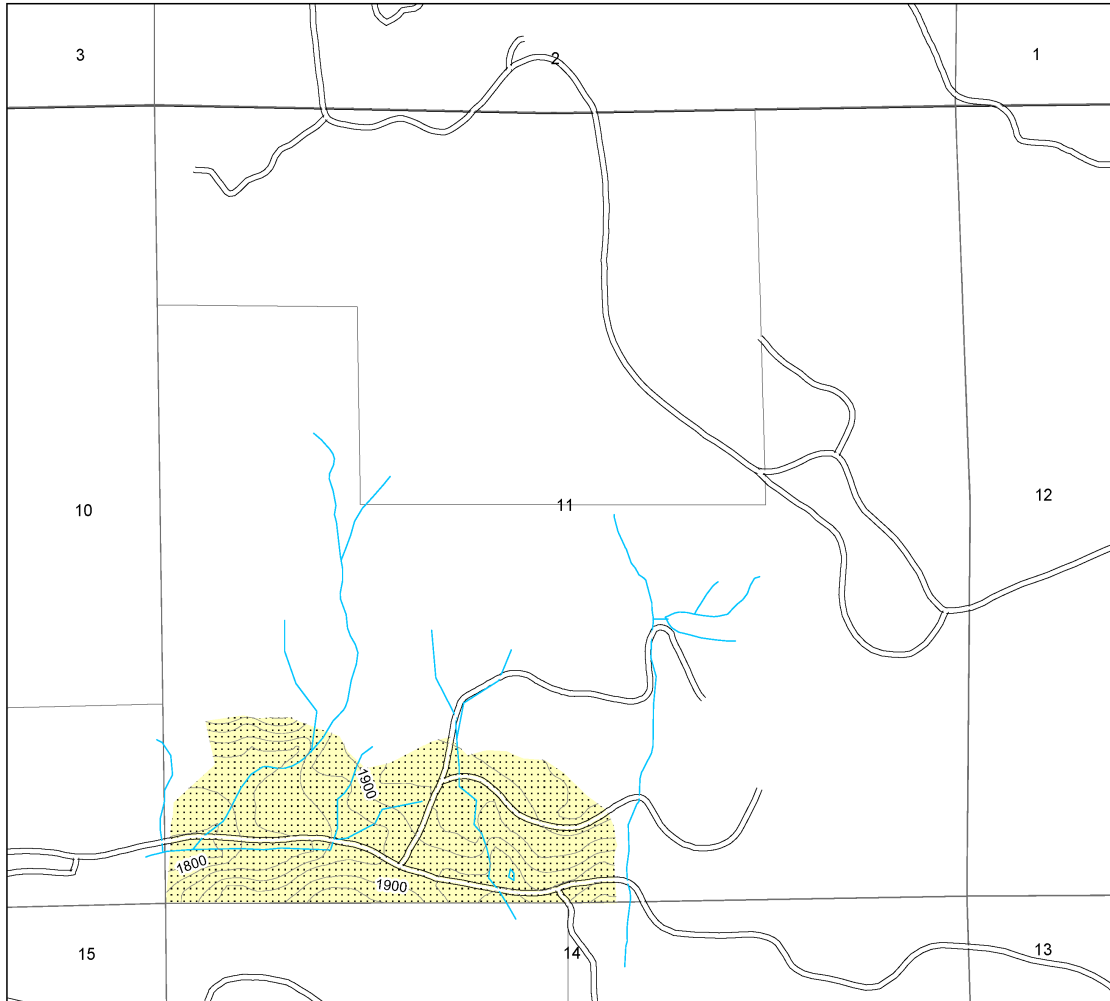
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data was compiled from various source data and may not meet U.S. National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Ag47 Projects EA

Project 3: Thomas Creek LSR Enhancement

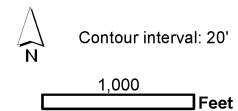
T. 10S., R. 2E., Section 11, W. M. - SALEM DISTRICT - OREGON



Legend

- Streams
- Existing Road
- Roads to be constructed
- Roads to be stabilized and closed

- Density Management
- Ground based yarding area



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data was compiled from various source data and may not meet U.S. National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

4.2.3 No Action Alternative

Management activities and other uses (e.g. road use, harvest of special forest products on public land) would continue on BLM and non-federal lands within and adjacent to the project area according to plans for those areas. This alternative also serves to set the environmental baseline for comparing effects to the proposed action.

4.3 Identification of Affected Elements of the Environment

The interdisciplinary team reviewed the elements of the environment, required by law, regulation, Executive Order and policy, to determine if they would be affected by the proposed action. Table 12 (Critical Elements of the Environment from BLM H-1790-1, Appendix 5) and Table 13 (Other Elements of the Environment) summarize the results of that review. **Affected elements are bold.** All entries apply to the proposed action, unless otherwise noted.

Table 12: Critical Elements of the Environment for Project 3

<i>Critical Elements Of The Environment</i>		<i>Status: (i.e., Not Present, Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Yes/No</i>	<i>Remarks If not affected, why?</i>
Adverse Impacts on the National Energy Policy		Not Affected	No	There are no known energy resources located in the project area. The proposed action will have no effect on energy development, production, supply and/or distribution.
Air Quality (RMP p. 22)		Affected	No	Addressed in text, EA section 4.4.6
Areas of Critical Environmental Concern		Not Present	No	There are no ACECs within the subbasins of the project area.
Cultural Resources (RMP p. 36)		Not Present	No	No cultural resources are known or suspected to be present in the proposed project area.
Environmental Justice (Executive Order 12898)		Not Affected	No	The proposed action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Prime or Unique Farm Lands		Not Present	No	
Flood Plains		Not Present	No	The proposed action does not involve occupancy and modification of floodplains, and will not increase the risk of flood loss.
Hazardous or Solid Wastes		Not Present	No	
Invasive, Nonnative Species (plants) (Executive Order 13112)		Affected	No	Addressed in text, EA section 2.4.1 Same as for project 1 except that there are no Priority II invasive plants.
Native American Religious Concerns		Not Present	No	No Native American religious concerns were identified during the public scoping period.
Threatened or Endangered (T/E) Species or Habitat (RMP p. 32)	Fish	Affected	No	Addressed in text, EA section 4.4.5
	Plant	Not Present	No	
	Wildlife	Affected	No	Addressed in text, EA section 4.4.4

<i>Critical Elements Of The Environment</i>	<i>Status: (i.e., Not Present , Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Yes /No</i>	<i>Remarks If not affected, why?</i>
Water Quality (Surface and Ground) (RMP pp. 22-24)	Affected	No	Addressed in text, EA section 4.4.3
Wetlands/Riparian Zones (RMP pp. 10, 22-24)	Affected	No	Addressed in text, EA section 4.4.3& 4.4.4
Wild and Scenic Rivers	Not Present	No	
Wilderness	Not Present	No	

Table 13: Other Elements of the Environment for Project 3

<i>Other Elements Of The Environment</i>	<i>Status: (i.e., Not Present , Not Affected, or Affected)</i>	<i>Does this project contribute to cumulative effects? Yes /No</i>	<i>Remarks If not affected, why?</i>
Coastal zone	Not Present	No	
Fire Hazard/Risk (RMP pp. 65-67)	Affected	Yes	Addressed in text, EA section 4.4.6
Other Fish Species with Bureau Status and Essential Fish Habitat (RMP pp. 29)	Not Affected	No	See EA section 4.4.5, no habitat affected by project.
Land Uses (right-of-ways, permits, etc)	Not Affected	No	Agreements are in place and would not be changed by the proposed project.
Late Successional and Old Growth Habitat	Not Present	No	
Mineral Resources	Not Present	No	
Recreation (RMP pp. 41-45)	Not Affected	No	See EA section 2.4.6)
Rural Interface Areas	Not Present	No	
Soils (RMP pp. 22-24)	Affected	No	Addressed in text, EA section 4.4.2
Special Areas outside ACECs (Within or Adjacent) (RMP pp. 33-35)	Not Present	No	
Other Special Status Species / Habitat	Plants	Not Present	No
	Wildlife	Affected	No
Visual Resources (RMP pp. 36-37)	Not Affected	No	
Water Resources – Other (303d listed streams, DEQ 319 assessment, Downstream Beneficial Uses; water quantity, Key watershed, Municipal and Domestic)	Affected	No	Addressed in text, EA section 4.4.3
Wildlife Structural or Habitat Components - Other (Snags/CWD/ Special Habitats, road densities) (RMP pp. 24-26)	Affected	No	Beneficial effects. Addressed in text, EA section EA section 4.4.1 & 4.4.4

Those elements of the human environment that were determined to be affected are: vegetation and forest stand characteristics, soil and site productivity, water and hydrology, wildlife, fisheries and aquatic habitat, and air quality/fire management.

4.4 Affected Environment and Environmental Effects

This section describes the current condition and trend of those affected elements identified in section 4.3 and the environmental effects of the alternatives on those elements.

4.4.1 Vegetation and Forest Stand Characteristics

Affected Environment

The proposed units of the LSR thinning are second growth stands that were primarily naturally regenerated after clearcut logging. They range from 40 to 50 years of age and are transitioning from early to mid-seral stage vegetation characteristics. The overstory consists primarily of Douglas-fir, with a major component of western hemlock, especially in unit 10-2-11. The understories consist of western hemlock, vine maple, and huckleberry, and are sparse in some areas. Western redcedar occurs and is rare. The ground cover is sparse and consists of sword fern, salal, and Oregon grape. There is a minor component of hardwoods consisting of bigleaf maple, red alder and some cherry.

Neither unit has been thinned, and as a result, crown closures are high and suppression mortality is evident throughout, especially in the Thomas Creek unit. Approximately one third of the acres proposed for thinning are in Riparian Reserve. The dense stands have already resulted in very low crown ratios in many parts of the stands. Low crown ratios make it difficult for the trees to take advantage of the increased light and nutrients to maximize growth. Densely grown stands also typically do not develop the degree of root strength needed to resist mass windthrow when exposed to increased winds. Wind exposure must typically be increased slowly over many years to develop the strength required for widely spaced trees typical of old growth stands to withstand winds. Both stands are typical of low elevation conifer stands of the Western Oregon Cascades Province.

No residual old growth trees or snags are now known to exist in these stands.

TRS 10-2-11: In some of the area proposed for treatment, patches of vine maple have reproduced vegetatively to produce a thick, many-branched growth form called “layering.” Conifer density is generally low in these patches, with very little need for thinning.

TRS 10-2-15: At about 285 trees per acre, this stand is very dense with high suppression mortality. Many stems have crown ratios of 10% or less.

Environmental Effects

4.4.1.1 Proposed Action

The early steps of developing desired late-successional/old growth stand characteristics would be implemented in this entry. Competition would be reduced within each stand so that growth would be concentrated on the stems most likely to develop the size and other characteristics desirable in late-successional habitat. Careful selection of retained trees (both for health and density) with due consideration for local wind patterns would avoid setting up the retained trees for mass windthrow.

Individual tree diameters would increase faster than untreated stands as the total biomass growth capability of the site is concentrated on fewer trees. The larger diameter trees would provide better quality opportunities for CWD and snags sooner than they would develop in untreated stands.

Crowns would recede at slower rates with reduced competition. This would result in larger, healthier crowns, larger diameter limbs, and stronger root systems capable of withstanding more wind. Increased crown ratios contribute to faster tree growth. Opening the closed canopy would encourage the development of understory and ground cover layers, increasing the complexity of the stand structure. Variable density thinning would contribute to both vertical and horizontal complexity. Creating canopy gaps around selected trees that still have low branches would start development of wolf trees in the stands.

Selection of suitable deformed trees for retention would preserve their presence in the developing stand to provide structural complexity. Topping (mechanical or by breakage during logging) and other treatments would start creating additional deformities to provide niche habitats. Selection of under-represented species for retention would promote habitat and species diversity in the long run. Protection of large snags and CWD from more than minor impacts would keep them as key structural features of these stands.

These trends would be anticipated to continue for two to three decades, accelerating in the early years and slowing as canopies close and stagnation starts toward the end of this period. If follow-up treatments are not done at that time, some benefits of treatment (such as wolf trees, niche habitats, and larger tree size) would continue beyond two to three decades, but other benefits (such as larger crowns and understory diversity) would start to decline again as the canopy closes.

4.4.1.2 No Action Alternative

Stand development would continue on its present trajectory, unless modified by unusual events such as wind, fire or disease. Crowns would continue to recede and crown ratios would continue to decline, reducing the overall growth and vigor of most of the individual trees.

Suppression mortality would continue and accelerate, creating large quantities of relatively small diameter snags that would become small diameter CWD, then litter/duff in just a few years. Low crown ratios and declining vigor would also make the stands more susceptible to disease and storm damage, with unpredictable effects on future stand and habitat conditions.

4.4.2 Soil and Site Productivity

Affected Environment

See Project 1, section 2.4.2. Soils and logging history are similar.

Environmental Effects

4.4.2.1 Proposed Action

The effects of logging would be similar to those described for Project 1, section 2.4.2.1.

Stabilizing the roads and making them impassable for motor vehicles would have effects similar to those described for the roads to be stabilized in Project 1, except that these roads do not have the current OHV use and erosion that some of the natural surface roads have in Project 1.

Most of the new multiple pass skid road system needed would be on top of the ridge in the southern edge of unit 10-2-11. Some additional soil displacement (with little or no compaction) would occur from winching logs up the adjacent moderately steep (35-45 percent) slope where standard tractor operations would not be allowed. Most compaction and soil displacement on these units would be confined to existing skid trails. Since there are no sustained, steep slopes, no measurable increase in the rate of erosion would be expected from the proposed action (see **Water and Hydrology Environmental Effects** below).

4.4.2.2 No Action Alternative

See Project 1, EA section 2.4.2.2.

4.4.3 Water and Hydrology

Affected Environment

The project area contains several small headwater streams tributary to Thomas Creek in the South Santiam watershed. These streams are in proper functioning condition: well shaded, stable beds and banks, adequate quantities of wood, sediment and a diversity of riparian species. Stream side shading from riparian vegetation is adequate to buffer streams from temperature increases.

None of the project area streams are listed on the state's 303d list or in the 319 Report for water quality issues (see Hydrology report pg.12-13). However, local streams flow into Thomas Creek which is listed for exceeding summer stream temperature standards. Recognized beneficial uses of in-stream flows include anadromous fish, resident fish, recreation, and esthetic value.

Environmental Effects

4.4.3.1 Proposed Action

- Long-term, measurable effects to watershed hydrology, channel morphology, and water quality as a result of the proposed action are unlikely. This action is unlikely to alter the current condition of the aquatic systems either by affecting its physical integrity, water quality, sediment regime or in-stream flows.
- Short-term, localized increases in stream sediment may occur as a result of harvest and road use (see Hydrology report pgs.20-24). Increases in sediment delivery to streams due to mass wasting are unlikely to result from this action. In addition, potential for measurable sediment delivery to streams, resulting from tree harvest and road construction/renovation, would be reduced by implementing Best Management Practices (BMP).
- Because the proposed project will remove less than half the existing forest cover, it is unlikely to produce any measurable effect on stream flows. Within riparian zones, substantial portions of the riparian canopy would be retained, therefore maintaining riparian microclimate conditions and protecting streams from increases in temperature.
- This proposal is unlikely to impede and/or prevent attainment of the stream flow and basin hydrology, channel function, or water quality objectives of the Aquatic Conservation Strategy (ACS). Over the long term, this proposal should aid in meeting ACS objectives by speeding the development of older forest characteristics in the riparian zone.

Cumulative Effects Analysis

The proposed project is unlikely to contribute to watershed cumulative effects because it is unlikely to produce any measurable effects to the watershed's sediment supply, turbidity levels, channel morphology, stream temperature regime, water quality or stream flows.

4.4.3.2 No Action Alternative

The "no action" alternative would result in the continuation of current conditions and trends at this site as described in the *Description of the Affected Resource* section of the EA and the *Ag47 Hydro Report*. Effects to the watershed would continue to occur from the development of private and other agency lands (primarily timber harvesting and road building).

4.4.4 Wildlife

Affected Environment

Vegetation: See Vegetation and Forest Stand Characteristics for Project 3, section 4.4.1.

Remnants, Snags and Coarse Woody Debris (CWD): There are no old growth remnants and virtually no large snags (>20 inches dbh) in the proposed units. There are large numbers (10+/acre) of small hard snags (<12 inches dbh) due to suppression mortality in both of the parcels. There are low levels (<50 lineal feet/acre) of large soft CWD (>20 inches in diameter) from the previous stand present. There are high levels (>240 lineal feet/acre) of small CWD (<12 inches in diameter) due to suppression mortality. Phellinus is present, especially in the Lyons Mainline unit (10-2-11) where hardwoods, some snags and CWD have developed in openings. Based on the stand exam information, there is a shortage of large snags and coarse woody debris (CWD) in the early decay classes.

Special Habitats: There is one wetland with a perennial pond adjacent to the proposed thinning in the east side of the Thomas Creek unit (10-2-15). The wetland/pond was created by beavers during the early seral stage of the stand, and the riparian zone is not well developed. The wetland/pond is located on a stream above road number -15, which slid out during the early 1990s. The stream and slide area have been stabilized. There is also one small high water area on the east side of unit 10-2-11.

Special Status Species: See the description for project 1, section 2.4.4.1., which contains information on amphibians, bats, goshawk, red tree voles and mollusks that is common to all projects. The proposed LSR thinning units provide dispersal habitat for the spotted owl. Neither unit is located in Critical Habitat or unmapped LSR core areas. The Upper Thomas unmapped core area is located within a quarter mile of unit 10-2-11, but this spotted owl site is historic and has not been occupied by spotted owls since 1997. There are no unmapped LSR core areas within disturbance range of unit 10-2-15. The closest known active spotted owl site is located about one mile from unit 10-2-11, and just over a half mile from unit 10-2-15. Barred owls have been observed in the vicinity of both units.

Cumulative Effects: This project does not contribute to wildlife cumulative effects because no regeneration harvest of late successional forest habitat is planned as part of this project. After treatment, federal lands in the Thomas Creek Watershed will remain above the 15 percent late successional guideline at 32 percent.

Road Densities: The LSR thinning units are located in the Indian Prairie and Avery Creek Sub-Watershed Basins (SWB), which have very high road densities approaching 5.5 miles per square mile. However, the entire Thomas Creek road system is gated and human traffic is low to moderate.

Environmental Effects

4.4.4.1 Proposed Action

See the description for Project 1, section 2.4.4.1. Additional information regarding the Northern Spotted Owl: In the short term, the dispersal habitat in these units would be altered, but would be maintained as dispersal habitat after harvest. In the long term, canopy closures would increase and these stands could attain “suitable habitat” conditions within 20 to 40 years.

4.4.4.2 No Action Alternative

See the description for Project 1, section 2.4.4.2.

4.4.5 Fisheries and Aquatic Habitat

Affected Environment

Thomas Creek, north of 10-2-15, is a fish bearing stream. All tributary streams are too small and steep to support fish, except for the stream east of 10-2-15 (see description of “special habitats” in the Wildlife section for Project 3, section 4.4.4.). All streams are well shaded, have stable beds and banks, have adequate quantities of wood and sediment, and have diverse riparian plant communities. Upper Willamette River steelhead trout and Upper Willamette River Chinook salmon are listed as “threatened” under the Endangered Species Act of 1973, as amended. Both species are found in Thomas Creek approximately 0.1 mile downstream of unit 10-2-15 and 1.5 miles downstream of unit 10-2-11. See Project 1, section 2.4.5. for information on NOAA/USFWS consultation.

Environmental Effects

4.4.5.1 Proposed Action

Density Management: See the description in Project 1, section 2.4.5.1.

Riparian Treatments without Wood Removal: Falling and girdling of selected riparian trees will have no adverse effects on aquatic habitat. Objectives of cut tree selection would be to prevent decreasing existing stream shade levels. Along Thomas Creek, north of Unit 10-2-15, current tree size is too small to provide significant benefits to aquatic habitat. Thinning the stream adjacent stand is expected to accelerate the growth rate of the leave trees, thereby hastening the time when they will be large enough to provide significant benefits to the aquatic habitat in Thomas Creek.

Threatened and Endangered Species: This project would have ‘no effect’ on ESA listed fish species due to its limited scope, project design which would prevent decreasing existing stream shade levels and target trees that are currently too small to provide significant benefits to aquatic habitat.

4.4.5.2 No Action Alternative

Current trends would continue, affected by projects by other agencies and landowners in the area.

4.4.6 Fire Management / Air Quality:

See the descriptions for Project 1, section 2.4.7., except that only landing piles would be burned since the gated road system mitigates potential human ignition sources for slash adjacent to the roads.

4.4.7 Comparison of Alternatives With Regard to Purpose and Need

Table 14: Comparison of Alternative by Purpose and Need

Purpose and Need (EA section 2.1)	No Action	Proposed Action
Speed development of structural complexity and characteristics of older forest stands.	Does not fulfill. Does not contribute to meeting this objective.	Fulfills. This is the design criteria of the project.
Provide contract(s) to support the economies of local communities.	Does not fulfill. Does not contribute to meeting this objective	Fulfills. Project would be accomplished with a contract(s).

4.5 Compliance with Components Aquatic Conservation Strategy Objectives

Table 15 shows this project's compliance with the four components of the Aquatic Conservation Strategy (1/ Riparian Reserves, 2/ Key Watersheds, 3/ Watershed Analysis and 4/ Watershed Restoration).

Table 15: Compliance of Components of the Aquatic Conservation Strategy Objectives for Project 1

ACS Component	Project Consistency
Component 1 - Riparian Reserves	There are no Riparian Reserves associated with this project. They are not overlaid on Late Successional Reserves. Maintaining canopy cover along all streams and the wetlands would protect stream bank stability and water temperature. Additionally, there would be no road construction within the equivalent area.
Component 2 - Key Watershed	The project is located within the Thomas Creek Watershed, which is not a designated key watershed.

ACS Component	Project Consistency
Component 3 - Watershed Analysis	The Thomas Creek Watershed Analysis document was completed in 1996. This project is consistent with the recommendations in the Watershed Analyses.
Component 4 - Watershed Restoration	This project is proposed specifically to restore elements of diversity for Watershed Restoration.

Neither the proposed action nor the no action alternative would prevent the attainment of any of the nine Aquatic Conservation Strategy Objectives (Appendix 2, EA section 8.2).

5.0 LIST OF PREPARERS

Table 16: List of Preparers

Resource	Name	Initial	Date
Silviculture	Charley Thompson	CT for CT	8/10/04
Cultural Resources	John Caruso (retired)	FMP for John	8/10/04
Hydrology/ Water Quality/Soils	Patrick Hawe	WH	8/10/04
Riparian Ecology	Charley Thompson	CT for CT	8/10/04
Botany TES and Special Attention Plant Species	Terry Fennell	TF for T.F	8/10/04
Wildlife TES and Special Attention Animal Species	Jim England	JE	8/10/04
Fire	Sam Caliva	SC for SC	8/10/04
Fisheries	Dave Roberts	DAR	8/10/04
Recreation Sites and Visual Resources Management and Rural Interface	Laura Graves	LAG	8/10/04
NEPA	Carolyn Sands	CS	8/10/04
Plans	Vince Cargile	VC for VC	8/10/04
Logging	Keith Walton	KW	8/10/04
Engineering	Steve Ditterick Jordan	RWD	10 Aug 04
Soils	Wesley Wong	WW	10 August 04

6.0 CONTACTS AND CONSULTATION

6.1 Consultation

6.1.1 ESA Section 7 Consultation

6.1.1.1 US Fish and Wildlife Service

Projects 1-3 will be submitted for Formal Consultation with U.S. Fish and Wildlife Service in August 2004. The Biological Opinion associated with these projects is expected in October 2004. According to the effect determination guidelines in the draft BA, these projects “may affect, but are not likely to adversely affect” the spotted owl due to the modification of dispersal habitat. All applicable terms and conditions from the Biological Opinion would be incorporated into the project design features.

6.1.1.2 NOAA Fisheries (NMFS) – Endangered Species Act Determination of Effect for Lower Columbia River steelhead trout, Lower Columbia River Chinook salmon and Upper Willamette River Chinook salmon.

A determination has been made that the proposed projects would have “No Effect” on ESA listed fish (see EA section 2.4.5 and EA Appendix 1, Endangered Species Act Determination of Effect for Lower Columbia River steelhead trout, Lower Columbia River chinook salmon and Upper Willamette River chinook salmon). As a result of the “No Effect” determination, no consultation with NOAA Fisheries for ESA listed fish species is required.

6.1.2 Cultural Resources - Section 106 Consultation and Consultation with State Historical Preservation Office:

Cultural Resource Inventory report # C 0304
Lookout Mtn. Thin (Pete Hazen, Nov. 3, 2003)
Reviewed and signed by District Archeologist (Philipek, 12/18/03)
Tracking form signed by Field Manager (Enstrom, 1/23/04)

6.2 Public Notification

1. 30-day public comment period: The EA and FONSI will be made available for public review August 11, 2004 to September 10, 2004. The notice for public comment will be published in a legal notice by the Stayton Mail newspaper; and posted on the Internet at <http://www.or.blm.gov/salem/html/planning/index.htm> under Environmental Assessments. Comments received by the Cascades Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before September 10, 2004 will be considered in making the final decisions for this project.

7.0 MAJOR SOURCES AND COMMON ACRONYMS

7.1 Major Sources

Specialists' reports can be found in the Ag47 Project file. These reports are available for review at the Salem District Office.

Caliva, S. 2004., Ag47 Fuels Management /Fire Ecology Interdisciplinary Team Review. [Fuels Report] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Ditterick, S., 2004. Ag47 Timber Sale Road Status. Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Fennell, T., 2003. Ag47 Thinning Timber Sale - Biological Evaluation for Special Status Plant Species/Survey & Manage Species and Noxious Weeds. [Botany Report] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Graves, L., 2004. Ag47 Timber Sale and Restoration Projects – Recreation and Rural Interface Resources. [Recreation Report] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Graves, L., 2004. Ag47 Timber Sale and Restoration Projects – Visual Resources Report. [VRM Report] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Hawe, P., 2003. Hydrology/Channels/Water quality: Environmental Assessment for the Proposed Ag47 Project. [Hydrology Report] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

England, J., 2004. Ag47, Affected Resource: Wildlife. [Wildlife Report] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Roberts, D., 2004. Ag47 Timber Sale Fisheries and Aquatic Habitat. [Fisheries Report] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Roberts, D., 2004. Ag47 Timber Sale – Endangered Species Act Determination of Effect for Lower Columbia River Steelhead Trout, Lower Columbia River Chinook Salmon and Upper Willamette River Chinook Salmon. [Fish Effect Determination] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Schlottmann, D., 2004. Silvicultural Prescriptions – Commercial Thinning, Ag47. [Silvicultural Prescription] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Walton, K., 2004. Preliminary Logging Systems Assessment. [Preliminary Logging Plan] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Wong, W., 2004. Ag47 Timber Sale Soils Report. [Soils Report] Cascades Resource Area, Salem District, Bureau of Land Management. Salem, OR.

USDI. Bureau of Land Management. 1995. Salem District Record of Decision and Resource Management Plan. Salem, OR. (RMP)

Table 17: Summary of RMP References	
RMP Topic	RMP page #
Air Quality	p. 22
Aquatic Conservation Strategy	pp. 5-7
Best Management Practices	Appendix C pp. C-1 to C-9
Cultural Resources	p. 36
Fire/ Fuels Management	pp. 65-67
Major Land Use Allocations	pp. 7-9
Matrix Land Use Allocation	pp. 20-22
Noxious Weeds	p. 64
Recreation	pp. 41-45
Riparian Reserve Land Use Allocation	pp. 9-15
Roads	pp. 62-64
Rural Interface Areas	pp. 39-40
Silvicultural Systems and Harvest Methods	Appendix D pp. D-1 to D-6
Special Forest Products	pp. 49-50
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Visual Resources	pp. 36-37
Water and Soils	pp. 22-24
Wild and Scenic Rivers	pp. 37-38
Wildlife Habitat	pp. 24-26
Wilderness	pp. 38-39

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7.2 Common Acronyms

ACS – Aquatic Conservation Strategy

BLM – Bureau of Land Management

BMP – Best Management Practice(s)

BO – Biological Opinion

CON – Connectivity land use allocation (Matrix)

CWD – Coarse Woody Debris

DBH (or dbh)– Diameter Breast Height

EA - Environmental Assessment

ESA – Endangered Species Act

FONSI – Finding of No Significant Impact

GFMA – General Forest Management Area land use allocation (Matrix)

HUC# - Hydrologic Unit Code Number (US Geological Survey)

LSR – Late Successional Reserve land use allocation

LSRA – Late Successional Reserve Assessment (1996)

LUA – Land Use Allocation

LWD – Large Woody Debris

NEPA – National Environmental Policy Act (1969)

NOAA – National Oceanic Atmospheric Administration (National Marine Fisheries Service (NMFS) is now called NOAA Fisheries)

NWFP – Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Related Species within the Range of the Northern Spotted Owl (1994) (Northwest Forest Plan)
RMP – Salem District Record of Decision and Resource Management Plan (1995)
RMPFEIS – Salem District Proposed Resource Management Plan / Final Environmental Impact Statement (1994)
ROW – Right-of-Way (roads)
RR – Riparian Reserves (land use allocation)
SPZ – Stream Protection Zone (no-cut protection zone/no-cut buffer/no-treatment Zone /stream buffer)
USDI – United States Department of the Interior
USFS – United States Forest Service
USFWS – United States Fish and Wildlife Service

8.0 APPENDICES

8.1 Appendix 1 – ESA Determination of Effect on Listed Fish

Endangered Species Act Determination of Effect for Lower Columbia River steelhead trout,
Lower Columbia River chinook salmon and Upper Willamette River chinook salmon

CHECKLIST FOR DOCUMENTING ENVIRONMENTAL BASELINE AND EFFECTS OF PROPOSED ACTION(S) ON RELEVANT INDICATORS FOR THE WILLAMETTE PROVINCE

Administrative Unit: Salem District BLM Basin/Section 7 Watershed: Projects 1-3

FACTORS INDICATORS	ENVIRONMENTAL BASELINE			EFFECTS OF THE ACTION(S)		
	Properly Functioning	At Risk	Not Proper. Functioning	Restore	Maintain	Degrade
Water Quality: Temperature					X	
Sediment/Turbidity					X	
Chem. Contam./Nut.					X	
Habitat Access: Physical Barriers					X	
Habitat Elements: Substrate					X	
Large Woody Debris (LWD)					X	
Pool Frequency					X	
Pool Quality					X	
Off-Channel Habitat					X	
Channel Cond. & Dyn.: Width/Depth Ratio					X	
Streambank Condition					X	
Floodplain Connectivity					X	
Flow/Hydrology: Peak/Base Flows					X	
Drainage Network Increase					X	
Watershed Condition: Road Dens. & Loc.					X	
Disturbance History					X	
Riparian Reserves					X	

Water Quality

Temperature

Temperature in all streams would be maintained by retaining all vegetation within a minimum of 50 feet of all streams, and tree selection for thinning in the Riparian Reserves that would be designed to ensure that existing shade levels would be maintained on stream channels and no increase in water temperature would occur.

Sediment/turbidity

The following project design criteria and site conditions are expected to prevent any increase in sediment in stream channels or any increase in stream turbidity in habitat occupied by ESA listed fish species:

- No harvest activity within a minimum of 50 feet of any stream channel.
- Requirement of water-bars on cable yarding corridors where gouging occurs on soils sensitive to erosion.
- Post-project leave tree densities of 50-100 trees per acre (tpa) throughout the project area.
- Contract requirement to suspend timber hauling if necessary to prevent road related sediment from entering streams if sediment traps/filtering were not adequate to prevent fine sediment delivery from the haul route to the stream systems.
- Approximate distance of 5.5 – 6.5 miles downstream from the project area to ESA listed fish habitat.

Chemical contamination/nutrients

No activities associated with the project would increase chemical or nutrient pollution except a low probability event such as an accidental spill or vehicle accident.

Habitat Access

Physical Barriers

No barriers to fish migration would result from the project.

Habitat Elements

Substrate, Large Woody Debris, Pool Frequency, Pool Quality, Off-channel Habitat

No project activities would occur sufficiently close to stream channels or create enough disturbance to affect any of the above instream habitat elements in the streams in the project area or in streams utilized by ESA listed fish approximately 5.5 – 6.5 miles downstream from the project area.

Channel Conditions and Dynamics

Width/depth ratio, Streambank Condition, Floodplain Connectivity

No project activities would occur sufficiently close to stream channels or create enough disturbance to affect any of the above channel conditions in stream channels in the project area or in streams utilized by ESA listed fish approximately 5.5 – 6.5 miles downstream from the project area.

Flow/Hydrology

Peak/base Flows

A preliminary analysis of the risk of increases in peak flows as a result of forest harvest was conducted using the Oregon Watershed Assessment Manual watershed analysis methods for forest hydrology. Current conditions in the project area indicate a low risk for peak flow enhancement in both watersheds. Since the proposed action will maintain all treated stands at no less than 40% crown closure, this proposal results in no additional risk. For analysis of the potential effects of the project on peak/base flows see the Hydrology report and section 2.4.3.1 of the EA.

Drainage Network Increase

There would be no increase in the drainage network due to roads as a result of the project since there none of the road segments proposed for construction have any hydrologic connection.

Watershed Conditions

Road Density & Location

Approximately 0.4 mile of new road are proposed for construction, but none of the proposed new road segments are in locations that would affect watershed hydrology or affect stream habitat in the project area or approximately 5.5 – 6.5 miles downstream where ESA listed fish species may be found.

Disturbance History

The project would not result in an increased level of disturbance. Post-project stand densities would be 90-120 tpa; no ground-based equipment would be allowed in Riparian Reserves, and no project activities would be conducted in unstable areas.

Riparian Reserves

Commercial thinning of approximately 50 acres of Riparian Reserves is proposed. Post-project stand densities of 90-120 tpa are expected to leave intact, fully functional Riparian Reserves and trees with increased growth potential as a result of reduction of competition for resources.

Conclusion

For the reasons stated in the preceding pages, the Ag47 Timber Sale (Project 1) and the Riparian Treatments (Project 2) are expected to have ‘no effect’ on any of the factors evaluated in Table 1, Matrix of Pathways and Indicators, in Little North Santiam River or the North Santiam River. The Thomas Creek LSR Enhancement (Project 3) is expected to have ‘no effect’ on any of the factors evaluated in Table 1, Matrix of Pathways and Indicators, in Thomas Creek. Therefore, the projects are expected to have ‘no effect’ on Lower Columbia River steelhead trout, Lower Columbia River chinook salmon or Upper Willamette River Chinook salmon.

The projects are also expected to have ‘no effect’ on Essential Fish Habitat as defined in the Magnuson-Stevens Act.

8.2 Appendix 2 - Aquatic Conservation Strategy Objectives

Unless otherwise specified, the No Action Alternative for each project would not prevent the attainment of any of the nine ACS objectives. Current conditions and trends would continue and are described in EA Sections (2.4 for Project 1, 3.4 for Project 2, and 4.4 for Project 3. Table 18 describes each project's consistency with the Aquatic Conservation Strategy Objectives.

Table 18: Projects' Consistency with the Nine A the Projects' Consistency with the Nine Aquatic Conservation Strategy Objectives			
Aquatic Conservation Strategy Objectives (ACSOs)	Project 1: Ag47 Timber Sale	Project 2: Riparian Reserve treatments without wood removal	Project 3: Thomas Creek LSR and Riparian Reserve Density Management
	Proposed Action	Proposed Action	Proposed Action
<i>1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features.</i>	Does not prevent the attainment of ACSO 1 . Retains forest cover, snags, CWD and old growth (OG) remnants at stand and landscape levels. Over time the proposed treatments are expected to accelerate development of more complex stand structure on watershed and landscape scales	Does not prevent the attainment of ACSO 1 . Very low intensity and small scale. Restores elements of diversity and complexity on small scale.	Does not prevent the attainment of ACSO 1 . This project is designed to restore elements of diversity and complexity to the watershed in the long term by applying silvicultural treatments to accelerate development of key elements of late-successional complexity.
<i>2. Maintain and restore spatial and temporal connectivity within and between watersheds.</i>	Does not prevent the attainment of ACSO 2 . Has little direct effect on connectivity between watersheds due to ownership patterns and continued forest cover.	Does not prevent the attainment of ACSO 2 . No effects anticipated due to very low intensity and small scale.	Does not prevent the attainment of ACSO 2 . Has little direct effect on connectivity in the short term, would provide for higher quality connectivity in the long term.
<i>3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.</i>	Does not prevent the attainment of ACSO 3 . Unlikely to alter the current condition of channels in the project area. Minimizes direct disturbances (e.g. increased flows or sediment delivery) so is likely to maintain stream channels in their current condition.	Does not prevent the attainment of ACSO 3 . No anticipated effect due to small scale and low intensity.	Does not prevent the attainment of ACSO 3 . Unlikely to alter the current condition of channels in the project area. Minimizes direct disturbances (e.g. increased flows or sediment delivery) so is likely to maintain stream channels in their current condition.
<i>4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.</i>	Does not prevent the attainment of ACSO 4 . Unlikely to have any measurable effect on stream temperatures, sediment, turbidity, alteration of stream substrate composition, sediment transport regime, fine organic material, or dissolved oxygen levels in project area streams	Does not prevent the attainment of ACSO 4 . Unlikely to have any measurable effect on stream temperatures, sediment, turbidity, alteration of stream substrate composition, sediment transport regime, fine organic material, or dissolved oxygen levels in project area streams	Does not prevent the attainment of ACSO 4 . Unlikely to have any measurable effect on stream temperatures, sediment, turbidity, alteration of stream substrate composition, sediment transport regime, fine organic material, or dissolved oxygen levels in project area streams

Table 18: Projects' Consistency with the Nine A the Projects' Consistency with the Nine Aquatic Conservation Strategy Objectives			
Aquatic Conservation Strategy Objectives (ACSOs)	Project 1: Ag47 Timber Sale	Project 2: Riparian Reserve treatments without wood removal	Project 3: Thomas Creek LSR and Riparian Reserve Density Management
	Proposed Action	Proposed Action	Proposed Action
<i>5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.</i>	Does not prevent the attainment of ACSO 5 . No measurable increase in sediment delivered to streams, stream turbidity, the alteration of stream substrate composition, or sediment transport regime.	Does not prevent the attainment of ACSO 5 . No measurable increase in sediment delivered to streams, stream turbidity, the alteration of stream substrate composition, or sediment transport regime.	Does not prevent the attainment of ACSO 5 . No measurable increase in sediment delivered to streams, stream turbidity, the alteration of stream substrate composition, or sediment transport regime.
<i>6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.</i>	Does not prevent the attainment of ACSO 6 . Effects to base flows and peak flows are not likely to be measurable. The cumulative effects analysis found low sensitivity to increases in peak flows and low potential risks for aquatic resources for normal storm events	Does not prevent the attainment of ACSO 6 . Effects to base flows and peak flows are not likely to be measurable. The cumulative effects analysis found low sensitivity to increases in peak flows and low potential risks for aquatic resources for normal storm events	Does not prevent the attainment of ACSO 6 . Effects to base flows and peak flows are not likely to be measurable. The cumulative effects analysis found low sensitivity to increases in peak flows and low potential risks for aquatic resources for normal storm events
<i>7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.</i>	Does not prevent the attainment of ACSO 7 . The current condition of floodplain inundation and water tables would be maintained with no measurable changes anticipated.	Does not prevent the attainment of ACSO 7 . The current condition of floodplain inundation and water tables would be maintained with no measurable changes anticipated.	Does not prevent the attainment of ACSO 7 . The current condition of floodplain inundation and water tables would be maintained with no measurable changes anticipated.
<i>8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands.</i>	Does not prevent the attainment of ACSO 8 . No adverse effects on species composition and structural diversity of plant communities in riparian areas and wetlands due to design features. Treatments would help to restore some structural diversity currently lacking on these sites.	Does not prevent the attainment of ACSO 8 . No adverse effects on species composition and structural diversity of plant communities in riparian areas and wetlands due to design features. Treatments would help to restore some structural diversity currently lacking on these sites.	Does not prevent the attainment of ACSO 8 . No adverse effects on species composition and structural diversity of plant communities in riparian areas and wetlands due to design features. Treatments would help to restore some structural diversity currently lacking on these sites.
<i>9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.</i>	Does not prevent the attainment of ACSO 9 . Riparian dependent species habitat not directly affected due to design features and riparian protection buffer. Operations may affect individuals, but no impacts to species would be expected due to large, adjacent untreated areas. Treatments would restore some habitat elements that are currently missing or of low quality.	Does not prevent the attainment of ACSO 9 . Riparian dependent species habitat not directly affected due to design features and riparian protection buffer. Operations may affect individuals, but no impacts to species would be expected due to large, adjacent untreated areas. Treatments would restore some habitat elements that are currently missing or of low quality.	Does not prevent the attainment of ACSO 9 . Riparian dependent species habitat not directly affected due to design features and riparian protection buffer. Operations may affect individuals, but no impacts to species would be expected due to large, adjacent untreated areas. Treatments would restore some habitat elements that are currently missing or of low quality.

